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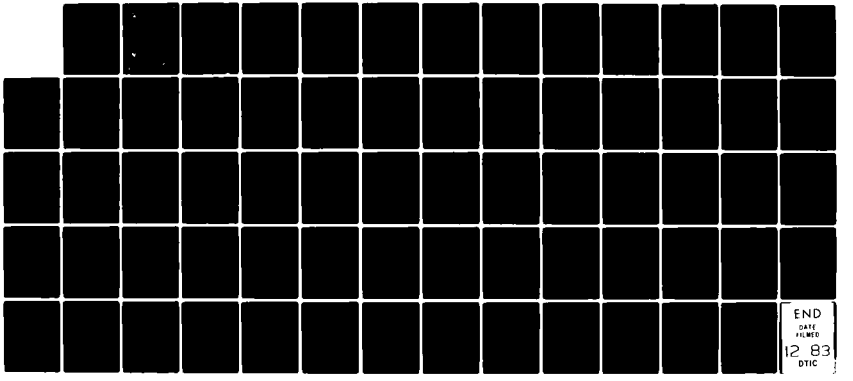

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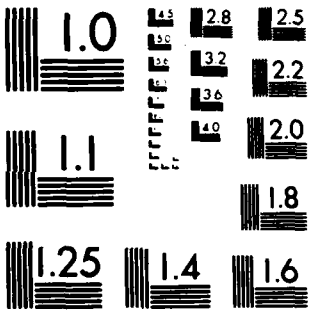

Technical Publication TP000014

TIDAL AND LUNAR DATA FOR POINT MUGU, SAN NICOLAS ISLAND, AND THE BARKING SANDS AREA DURING 1984

Compiled by

RICH DIXON
Geophysics Division

30 December 1983

PACIFIC MISSILE TEST CENTER
Point Mugu, California 93042

PACIFIC MISSILE TEST CENTER

AN ACTIVITY OF THE NAVAL AIR SYSTEMS COMMAND

Mr. J. S. Rosenthal, Head, Geophysical Sciences Branch; and CDR R. B. Glass, *Geophysics Officer and Project Manager*, have approved this report for publication.

K. I. LICHTI
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Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1984 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, and (3) times of lunar phases.

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CONTENTS

CONTENTS (Concluded)

INTRODUCTION

This publication combines into a single source all tidal and lunar data for operational locations of the Pacific Missile Test Center for use in Calendar Year 1984.

The data presentations are in two main divisions: one for Point Mugu and San Nicolas Island, and the other for the Barking Sands area. Within each division, the times of moonrise and moonset and tidal data are given. An appendix provides information regarding lunar phases. Since all such data change from year to year, this publication will be reissued annually.

Sunrise-sunset times for these locations, and associated solar data which do not change significantly from year to year, are issued as a single, permament publication. Further information regarding any of these data may be obtained from the Geophysics Division of the Range Operations Department.

DATA SOURCE AND TIME REFERENCES

The data given here have been prepared from information contained in Tide Tables for the West Coast of North and South America including the Hawaiian Islands, 1984.*

For Point Mugu and San Nicolas Island, all times listed are Pacific Standard Time (PST); add eight hours to obtain Greenwich Mean Time (GMT or Z).**

For the Barking Sands Area, all times listed are Alaska-Hawaii Standard Time (AHST); add ten hours to obtain GMT. Daylight Saving Time is not observed in Hawaii.

*National Ocean Survey, Tide Tables for the West Coast of North and South America including the Hawaiian Islands, 1984. *Washington*, D.C., GPO, 1983.

**When Daylight Saving Time (PDT) is in effect, 1 hour is to be added to the times given. In 1984, Pacific Daylight Time is scheduled to commence at 0200 PST on Sunday, 29 April (add 1 hour), and to end at 0200 PDT on Sunday, 28 October (subtract 1 hour).

TIDAL DATA

The ranges of tidal heights that may be expected at Point Mugu and San Nicolas Island are shown in table 1. The range of heights for the primary harbor in the Barking Sands area, Port Allen, is shown in table 2. The times and heights of high and low tides for 1984 at Point Mugu are given in the even-numbered tables 4 through 26, and at San Nicolas Island in the odd-numbered tables 5 through 27. Similar tide data for Port Allen are given in tables 29 through 40.

Table 1. Tidal Ranges for Point Mugu and San Nicolas Island.

Tidal Levels	Point Mugu	San Nicolas Island
	Height (Feet)	Height (Feet)
Extreme high water	7.3	6.7
Mean higher high water	5.3	4.9
Mean high water	4.5	4.1
Mean tide level*	2.7	2.5
Mean low water	0.9	0.8
Mean lower low water	0.0	0.0
Extreme low water	-2.0	-1.8

*The mean tide level is also called mean sea level.

Table 2. Tidal Ranges for Port Allen.

Tidal Levels	Height (Feet)
Extreme high water	2.6
Mean higher high water	1.6
Mean high water	1.2
Mean tide level*	0.7
Mean low water	0.2
Mean lower low water	0.0
Extreme low water	-0.4

*The mean tide level is also called mean sea level.

Tidal graphs prepared from the Point Mugu data are presented in figures 1 through 12, and graphs prepared from the Port Allen tables are presented in figures 13 through 24. (Because of their close similarlity to the Point Mugu graphs, graphical presentations of the San Nicolas Island data are not included in this publication.)

These tables list the times and heights of high and low tide for each month of the year and chronologically through each day. The heights are all measured from mean lower low water (see tables 1 and 2) and are values for a sea unaffected by wind waves or swell. The height and character of the sea surface are influenced by factors other than the predictable positions of the moon and sun, and is thus likely to be higher or lower than computed values may indicate. Information regarding the height of the tide at any time will be found in appendix A.

LUNAR DATA

Times of moonrise and moonset for the Point Mugu-San Nicolas Island area in 1984 are given in table 3, and for the Barking Sands area in table 28, preceding the tidal data for the respective stations. Information regarding the phases of the moon in 1984 will be found in appendix B.

Table 3. Moonrise and Moonset, Point Mugu, California, 1984.

Date	January		February		March		April		May		June		Date
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	
1	0547	1546	0703	1717	0614	1704	0607	1841	0533	1929	0620	2128	1
2	0644	1636	0739	1814	0644	1800	0633	1938	0607	2031	0721	2223	2
3	0737	1730	0812	1910	0711	1856	0701	2036	0646	2135	0827	2310	3
4	0824	1827	0841	2006	0737	1951	0731	2136	0733	2236	0935	2352	4
5	0904	1925	0907	2101	0803	2046	0807	2238	0827	2334	1045	------	5
6	0939	2022	0933	2156	0829	2143	0848	2340	0928	------	1153	0028	6
7	1010	2118	0959	2252	0858	2241	0936	------	1035	0025	1301	0101	7
8	1039	2213	1027	2349	0930	2342	1033	0041	1144	0111	1408	0132	8
9	1105	2308	1057	------	1007	------	1136	0137	1253	0150	1515	0203	9
10	1131	------	1131	0049	1051	0045	1245	0227	1403	0226	1623	0236	10
11	1158	0004	1212	0152	1143	0147	1356	0312	1511	0259	1731	0312	11
12	1227	0101	1300	0257	1244	0248	1508	0351	1620	0331	1838	0352	12
13	1300	0201	1358	0401	1352	0344	1620	0427	1730	0403	1941	0438	13
14	1338	0304	1505	0502	1505	0434	1731	0500	1840	0438	2039	0530	14
15	1424	0411	1618	0557	1619	0518	1842	0534	1949	0516	2129	0627	15
16	1518	0517	1733	0646	1733	0557	1952	0608	2055	0600	2212	0726	16
17	1622	0622	1848	0728	1845	0632	2102	0645	2156	0649	2248	0826	17
18	1733	0721	2000	0805	1957	0706	2210	0726	2250	0743	2320	0925	18
19	1847	0813	2111	0839	2107	0740	2313	0811	2337	0841	2348	1022	19
20	2000	0857	2219	0912	2216	0815	------	0902	------	0940	------	1118	20
21	2112	0936	2326	0945	2322	0853	0010	0957	0016	1039	0014	1213	21
22	2220	1010	------	1020	------	0935	0059	1054	0050	1137	0040	1308	22
23	2327	1042	0031	1059	0026	1022	0141	1152	0120	1233	0105	1405	23
24	------	1114	0135	1141	0125	1113	0218	1250	0147	1328	0133	1503	24
25	0032	1147	0234	1228	0217	1207	0250	1347	0213	1423	0203	1604	25
26	0136	1222	0330	1319	0303	1304	0318	1442	0238	1520	0238	1708	26
27	0239	1300	0419	1414	0342	1401	0344	1538	0305	1617	0320	1813	27
28	0340	1343	0503	1511	0417	1458	0410	1633	0333	1717	0410	1916	28
29	0439	1431	0541	1608	0447	1554	0436	1730	0406	1820	0508	2014	29
30	0532	1524	------	------	0515	1650	0503	1828	0443	1924	0614	2106	30
31	0621	1619	------	------	0541	1745	------	------	0528	2028	------	------	31

Date	July		August		September		October		November		December		Date
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	
1	0724	2151	0951	2208	1211	2229	1310	2253	1359	------	1323	0024	1
2	0835	2229	1059	2240	1317	2314	1402	2352	1429	0040	1348	0119	2
3	0945	2303	1206	2313	1419	------	1447	------	1455	0137	1413	0214	3
4	1053	2335	1313	2350	1515	0005	1524	0051	1521	0233	1439	0310	4
5	1200	------	1419	------	1604	0100	1557	0150	1545	0328	1507	0407	5
6	1307	0006	1523	0031	1646	0158	1625	0248	1610	0423	1540	0506	6
7	1413	0038	1623	0117	1722	0258	1651	0344	1637	0519	1618	0607	7
8	1520	0112	1717	0209	1753	0356	1716	0440	1707	0617	1703	0709	8
9	1626	0150	1804	0306	1821	0454	1741	0534	1741	0716	1756	0810	9
10	1730	0233	1845	0405	1847	0550	1806	0630	1821	0817	1856	0907	10
11	1829	0321	1920	0505	1912	0645	1834	0726	1907	0918	2001	0958	11
12	1922	0416	1950	0603	1937	0740	1905	0824	2002	1017	2108	1042	12
13	2007	0514	2018	0700	2003	0835	1940	0923	2103	1111	2216	1121	13
14	2046	0614	2043	0756	2031	0931	2022	1024	2208	1200	2324	1155	14
15	2120	0714	2108	0851	2104	1029	2111	1124	2316	1242	------	1227	15
16	2149	0812	2134	0945	2141	1129	2208	1221	------	1319	0031	1257	16
17	2216	0908	2201	1041	2226	1230	2311	1314	0025	1353	0138	1328	17
18	2241	1004	2231	1138	2318	1331	------	1401	0134	1425	0247	1401	18
19	2306	1058	2305	1238	------	1428	0019	1443	0243	1456	0357	1438	19
20	2332	1154	2346	1339	0019	1521	0130	1520	0353	1529	0508	1521	20
21	------	1250	------	1442	0127	1608	0241	1555	0504	1605	0617	1610	21
22	0001	1349	0035	1543	0239	1649	0353	1627	0617	1645	0723	1706	22
23	0033	1451	0134	1641	0353	1726	0505	1700	0730	1732	0822	1808	23
24	0111	1555	0240	1732	0506	1800	0617	1735	0839	1825	0911	1911	24
25	0157	1659	0352	1817	0619	1833	0731	1814	0941	1924	0953	2014	25
26	0251	1800	0506	1857	0732	1907	0844	1857	1035	2026	1028	2115	26
27	0354	1855	0620	1932	0844	1943	0954	1946	1120	2128	1058	2213	27
28	0504	1944	0733	2006	0956	2023	1059	2041	1158	2229	1125	2309	28
29	0617	2026	0844	2038	1105	2108	1156	2141	1230	2328	1150	------	29
30	0730	2102	0954	2112	1211	2158	1244	2241	1258	------	1214	0004	30
31	0841	2136	1103	2148	------	------	1325	2342	------	------	1239	0059	31

TABLE 4
POINT MUGU TIDES
JANUARY 1984
34 DEG 06 MIN N. 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0116	2.1	0727	6.1	1456	-1.0	2123	3.6
2	0154	2.2	0801	6.0	1532	-1.0	2202	3.6
3	0230	2.2	0837	6.0	1609	-.9	2238	3.6
4	0305	2.3	0909	5.9	1642	-.7	2318	3.5
5	0340	2.4	0942	5.6	1717	-.5	2353	3.5
6	0419	2.5	1020	5.2	1750	-.2	----	---
7	0032	3.5	0502	2.6	1055	4.8	1826	.2
8	0117	3.6	0558	2.7	1134	4.7	1901	.6
9	0202	3.6	0715	2.7	1224	3.7	1940	1.0
10	0248	3.8	0857	2.5	1336	3.2	2022	1.3
11	0330	4.1	1034	2.0	1530	2.8	2108	1.7
12	0412	4.4	1140	1.3	1724	2.8	2203	2.0
13	0452	4.8	1229	.7	1839	3.0	2300	2.1
14	0535	5.3	1310	0.0	1932	3.2	2353	2.2
15	0617	5.7	1352	-.7	2016	3.5	----	---
16	0044	2.2	0659	6.1	1430	-1.2	2056	3.6
17	0132	2.0	0742	6.4	1512	-1.5	2136	3.7
18	0217	1.9	0826	6.6	1551	-1.6	2217	3.9
19	0307	1.8	0911	6.6	1633	-1.6	2259	4.0
20	0356	1.7	1000	6.3	1714	-1.3	2341	4.2
21	0453	1.7	1048	5.8	1758	-.9	----	---
22	0026	4.3	0556	1.7	1144	5.0	1841	-.2
23	0115	4.5	0715	1.6	1250	4.1	1927	.5
24	0210	4.7	0848	1.4	1414	3.4	2020	1.2
25	0309	4.9	1023	1.1	1610	3.0	2118	1.7
26	0407	5.1	1147	.5	1758	3.0	2231	2.1
27	0504	5.3	1246	-.1	1915	3.2	2337	2.3
28	0557	5.5	1334	-.5	2006	3.4	----	---
29	0032	2.3	0639	5.6	1413	-.8	2044	3.6
30	0115	2.2	0721	5.8	1448	-.9	2116	3.6
31	0153	2.1	0757	5.8	1520	-.9	2145	3.6

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 5
SAN NICOLAS ISLAND TIDES
JANUARY 1984
33 DEG 16 MIN N [illegible] CENTRAL PART NE [illegible]

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0126	1.9	0734	5.6	1506	- 4	2130	[illegible]
2	0204	2.0	0808	5.5	1542	- 3	2209	[illegible]
3	0240	2.0	0844	5.5	1619	- -	2249	3.7
4	0315	2.1	0916	5.4	1652	- 6	2325	3.6
5	0350	2.2	0949	5.1	1727	- 4	0000	3.5*
6	0429	2.3	1027	4.8	1808	- 2	----	--
7	0039	3.2	0512	2.4	1102	4.4	1836	.2
8	0124	3.3	0608	2.5	1141	4.3	1911	.5
9	0209	3.3	0725	2.5	1231	3.4	1956	.9
10	0255	3.5	0907	2.3	1343	2.9	2032	1.2
11	0337	3.8	1044	1.8	1537	2.6	2118	1.6
12	0419	4.0	1150	1.2	1731	2.6	2213	1.8
13	0459	4.4	1239	.6	1846	2.7	2310	1.9
14	0542	4.8	1320	0.0	1939	2.9	0003	2.0*
15	0624	5.2	1402	-.6	2027	3.2	----	---
16	0054	2.0	0706	5.6	1440	-1.1	2103	3.3
17	0142	1.8	0749	5.9	1522	-1.4	2143	3.4
18	0227	1.8	0833	6.1	1601	-1.5	2224	3.6
19	0317	1.7	0918	6.1	1643	-1.5	2306	3.7
20	0406	1.6	1007	5.8	1724	-1.2	2348	3.9
21	0503	1.6	1055	5.2	1808	-.8	----	---
22	0033	4.0	0606	1.6	1151	4.6	1851	-.2
23	0122	4.1	0725	1.5	1257	3.8	1937	.4
24	0217	4.3	0858	1.3	1421	3.1	2030	1.1
25	0316	4.5	1033	1.0	1617	2.7	2128	1.6
26	0414	4.7	1157	.4	1805	2.7	2241	1.9
27	0511	4.8	1256	- 1	1922	2.9	2347	2.1
28	0604	5.0	1344	-.4	2013	3.1	----	---
29	0042	2.1	0646	5.1	1423	-.7	2051	3.3
30	0125	2.0	0728	5.3	1458	-.8	2123	3.3
31	0203	1.9	0804	5.3	1530	-.8	2152	3.3

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

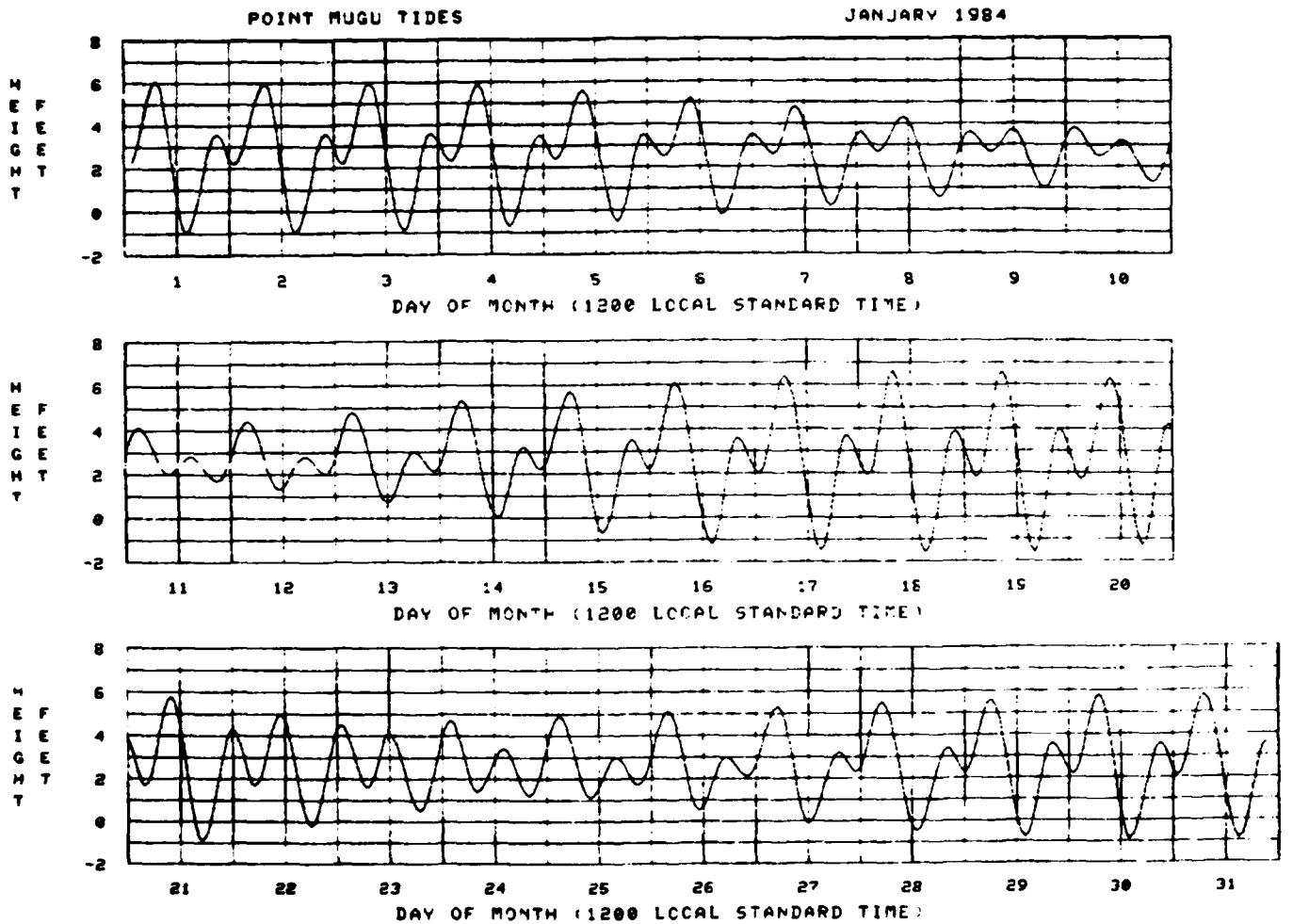

POINT MUGU TIDES
JANJARY 1984
HEIGHT FEET
8
6
4
2
0
-2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
11 12 13 14 15 16 17 18 19 20
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
21 22 23 24 25 26 27 28 29 30 31
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 6
POINT MUGU TIDES
FEBRUARY 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0229	.7	0829	5.8	1549	-1.2	2207	3.7
2	0303	1.9	0901	5.7	1617	-.7	2232	3.7
3	0334	1.8	0932	5.5	1643	-.4	2300	3.8
4	0409	1.8	1004	5.1	1705	-.1	2328	3.8
5	0445	1.8	1036	4.7	1731	.3	2356	3.8
6	0531	1.9	1109	4.1	1758	.7	----	---
7	0025	3.9	0626	1.9	1150	3.6	1821	1.2
8	0104	4.0	0741	1.9	1250	3.0	1849	1.6
9	0146	4.1	0925	1.6	1447	2.5	1922	2.0
10	0246	4.3	1100	1.2	1743	2.5	2037	2.4
11	0357	4.6	1206	.5	1858	2.9	2223	2.6
12	0500	5.0	1252	-.2	1933	3.2	2339	2.4
13	0554	5.5	1334	-.9	2008	3.6	----	---
14	0038	2.1	0646	6.0	1412	-1.3	2034	3.8
15	0128	1.7	0735	6.3	1451	-1.6	2109	4.1
16	0216	1.3	0820	6.5	1528	-1.6	2144	4.4
17	0304	1.1	0905	6.4	1606	-1.4	2216	4.6
18	0353	.8	0954	6.0	1642	-1.1	2254	4.8
19	0445	.7	1043	5.4	1720	-.4	2334	4.9
20	0544	.7	1135	4.6	1756	.3	----	---
21	0016	4.9	0653	.8	1240	3.6	1835	1.1
22	0108	4.8	0819	.8	1412	3.0	1920	1.7
23	0209	4.7	1002	.7	1634	2.7	2032	2.3
24	0322	4.7	1128	.3	1830	3.0	2218	2.6
25	0440	4.7	1230	-.1	1923	3.4	2343	2.5
26	0543	4.9	1318	-.4	2002	3.6	----	---
27	0038	2.3	0631	5.1	1355	-.6	2026	3.7
28	0121	2.0	0713	5.3	1425	-.7	2050	3.8
29	0154	1.7	0748	5.4	1452	-.7	2106	3.9

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 7
SAN NICOLAS ISLAND TIDES
FEBRUARY 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0239	.6	0836	5.7	1559	-1.1	2214	3.4
2	0313	1.8	0908	5.5	1627	-.9	2239	3.4
3	0344	1.7	0939	5.0	1653	-.4	2307	3.5
4	0419	1.7	1011	4.7	1715	-.1	2335	3.5
5	0455	1.7	1043	4.3	1741	.3	0003	3.5*
6	0541	1.8	1116	3.8	1808	.6	----	---
7	0032	3.6	0636	1.8	1157	3.7	1831	1.1
8	0111	3.7	0751	1.8	1257	3.7	1859	1.5
9	0153	3.8	0935	1.5	1454	3.3	1932	1.8
10	0253	4.0	1110	1.1	1750	2.8	2047	2.2
11	0404	4.2	1216	.4	1905	2.6	2233	2.4
12	0507	4.6	1302	-.2	1940	2.9	2349	2.2
13	0601	5.0	1344	-.8	2015	3.3	----	---
14	0048	1.9	0653	5.5	1422	-1.2	2041	3.5
15	0138	1.6	0742	5.8	1501	-1.5	2116	3.8
16	0226	1.2	0827	6.0	1538	-1.5	2151	4.0
17	0314	1.0	0912	5.9	1616	-1.3	2223	4.2
18	0403	.7	1001	5.5	1652	-1.0	2301	4.4
19	0455	.6	1050	4.9	1730	-.4	2341	4.5
20	0554	.6	1142	4.2	1806	.3	----	---
21	0023	4.5	0703	.7	1247	3.3	1845	1.0
22	0115	4.4	0829	.7	1419	2.7	1930	1.6
23	0216	4.3	1012	.6	1641	2.5	2042	2.1
24	0329	4.3	1138	.3	1837	2.7	2228	2.4
25	0447	4.3	1240	-.1	1930	3.1	2353	2.3
26	0550	4.5	1328	-.4	2009	3.3	----	---
27	0048	2.1	0638	4.7	1405	-.5	2033	3.4
28	0131	1.8	0720	4.8	1435	-.6	2057	3.5
29	0204	1.6	0755	4.9	1502	-.6	2113	3.6

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

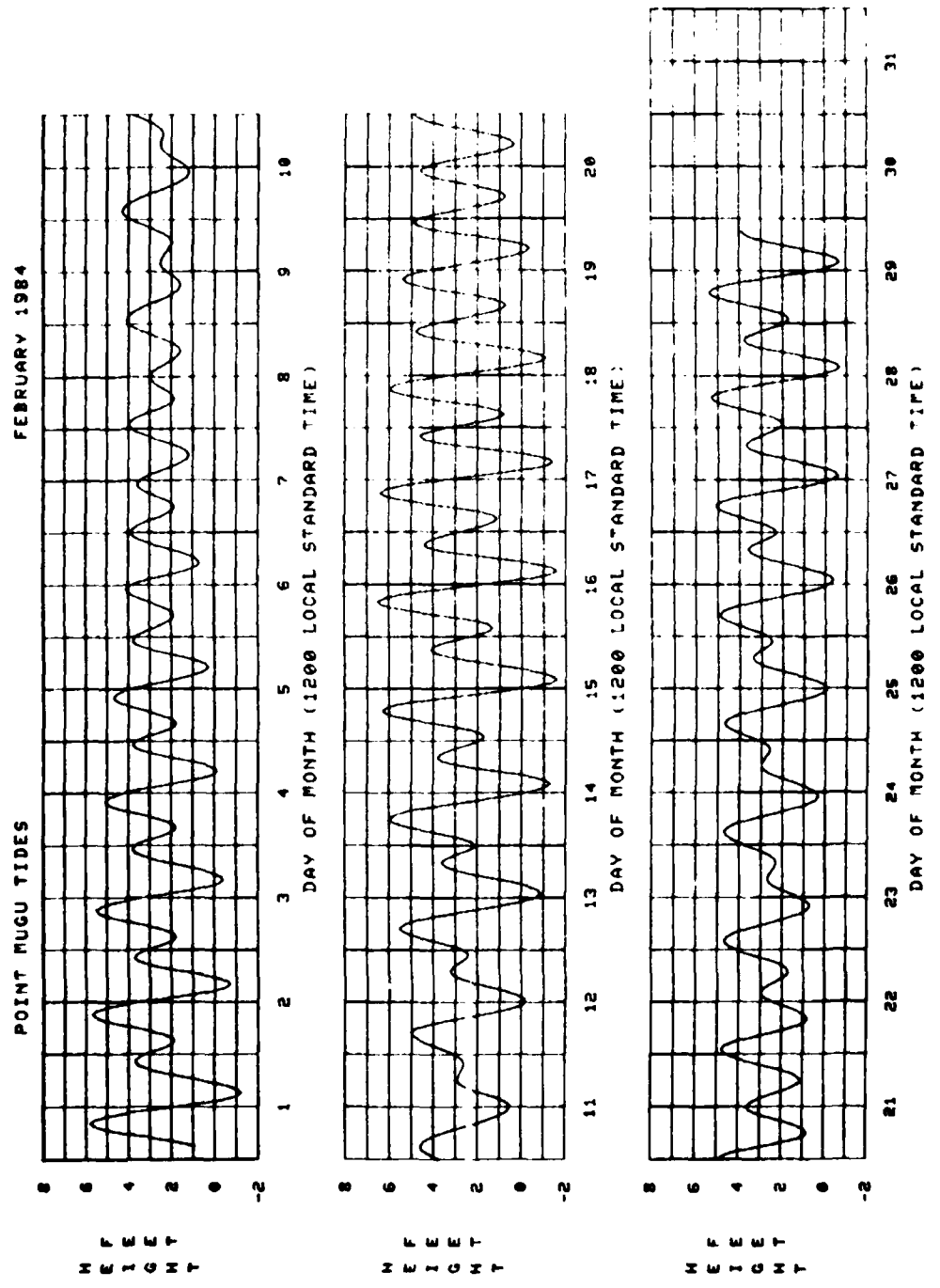

POINT MUGU TIDES
FEBRUARY 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 8
POINT MUGU TIDES
MARCH 1984
34 DEG 06 MIN N. 119 DEG 06 MIN W - OCEAN PIER

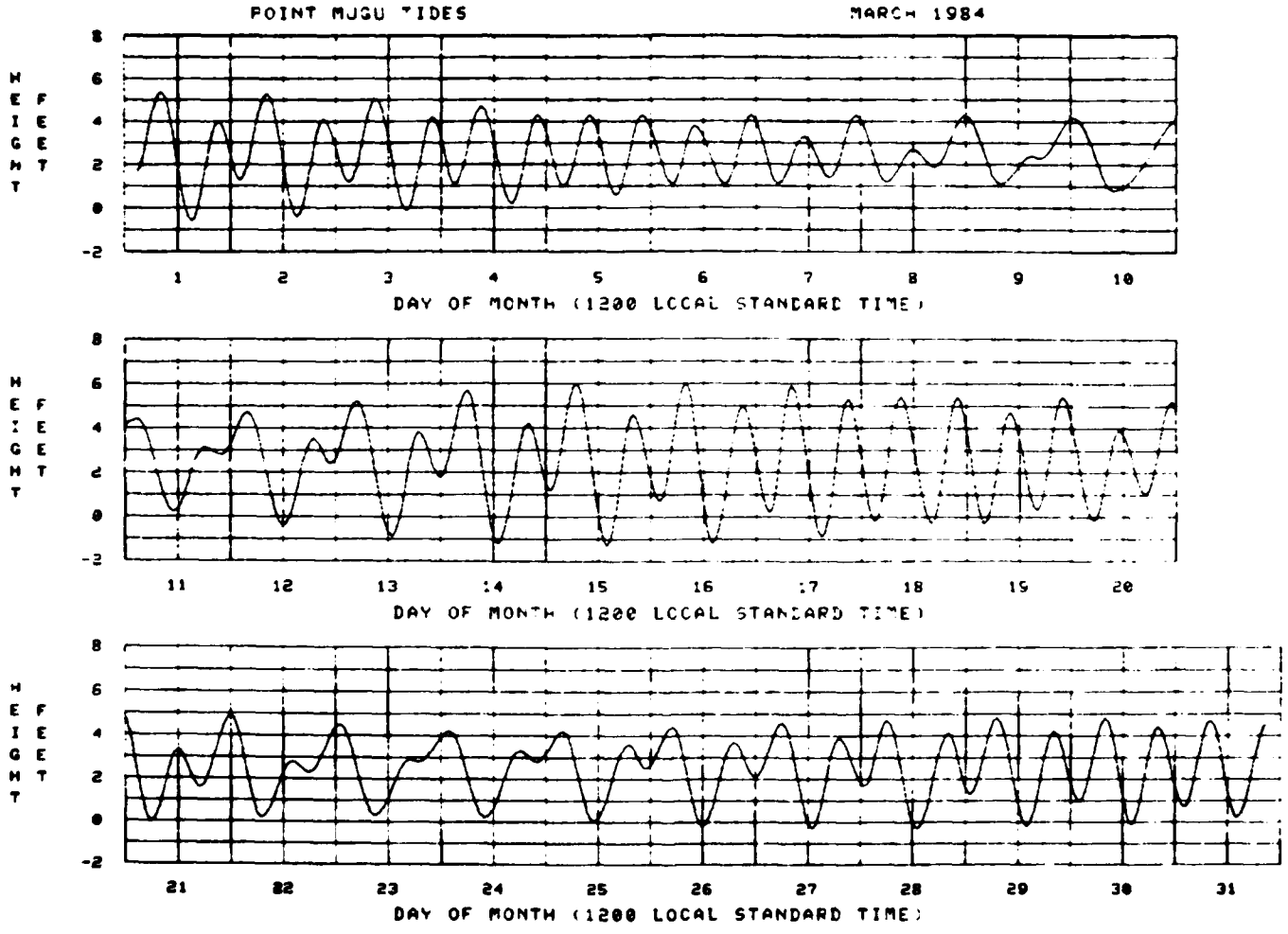
DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0223	1.5	0820	5.4	1518	-.6	2127	4.0
2	0255	1.3	0847	5.3	1540	-.4	2148	4.1
3	0325	1.2	0918	5.1	1601	-.1	2208	4.2
4	0357	1.1	0949	4.7	1620	.2	2229	4.3
5	0431	1.0	1022	4.3	1644	.6	2251	4.3
6	0510	1.1	1057	3.8	1702	1.1	2316	4.3
7	0555	1.1	1139	3.3	1730	1.4	2348	4.3
8	0656	1.2	1243	2.7	1736	1.9	----	---
9	0027	4.3	0828	1.1	1506	2.4	1744	2.3
10	0130	4.2	1015	.8	----	---	----	---
11	0304	4.4	1132	.2	1854	3.1	2218	2.8
12	0432	4.7	1223	-.4	1914	3.5	2341	2.4
13	0538	5.2	1306	-.9	1933	3.8	----	---
14	0036	1.8	0634	5.7	1343	-1.2	2005	4.2
15	0125	1.2	0723	6.0	1420	-1.3	2033	4.6
16	0213	.7	0811	6.0	1456	-1.2	2105	5.0
17	0300	.2	0857	5.9	1531	-.9	2137	5.3
18	0347	-.2	0947	5.4	1606	-.3	2212	5.4
19	0436	-.3	1035	4.7	1639	.3	2248	5.4
20	0528	-.2	1131	3.9	1713	1.0	2326	5.2
21	0631	0.0	1240	3.3	1748	1.6	----	---
22	0010	4.9	0746	.2	1426	2.2	1831	2.3
23	0109	4.5	0923	.3	1702	2.9	1956	2.8
24	0231	4.2	1055	.2	1828	3.3	2226	2.8
25	0407	4.2	1159	0.0	1900	3.6	2348	2.5
26	0523	4.4	1246	-.2	1927	3.7	----	---
27	0036	2.1	0612	4.6	1321	-.3	1946	3.9
28	0112	1.7	0654	4.7	1350	-.3	2005	4.1
29	0144	1.3	0729	4.8	1413	-.2	2024	4.2
30	0212	1.0	0801	4.8	1436	-.1	2042	4.4
31	0241	.7	0833	4.7	1455	.2	2100	4.6

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 9
SAN NICOLAS ISLAND TIDES
MARCH 1984
33 DEG 16 MIN N. 119 DEG 30 MIN W - CENTRAL PART OF W

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0233	1.4	0827	4.9	1520	-.6	2134	3.7
2	0305	1.2	0854	4.9	1544	-.4	2155	3.8
3	0335	1.1	0925	4.8	1611	-.1	2216	3.9
4	0407	1.0	0956	4.3	1634	.2	2238	4.0
5	0441	.9	1029	4.0	1654	.5	2258	4.0
6	0520	1.0	1104	3.5	1712	1.0	2317	4.1
7	0605	1.0	1146	3.0	1740	1.3	2345	4.1
8	0706	1.1	1250	2.5	1746	1.8	----	---
9	0034	4.0	0838	1.0	1513	2.2	1754	2.1
10	0137	3.9	1025	.7	----	---	----	---
11	0311	4.0	1142	.2	1901	2.8	2220	2.6
12	0439	4.3	1233	-.4	1921	3.2	2351	2.2
13	0545	4.9	1316	-.8	1940	3.5	----	---
14	0046	1.7	0641	5.2	1357	-1.1	2012	3.9
15	0135	1.1	0730	5.5	1430	-1.2	2040	4.2
16	0223	.6	0818	5.5	1506	-1.1	2112	4.6
17	0310	.2	0904	5.4	1541	-.8	2144	4.8
18	0357	-.2	0954	4.9	1616	-.3	2219	4.9
19	0446	-.3	1042	4.3	1649	.3	2255	4.9
20	0538	-.2	1138	3.6	1723	.9	2333	4.8
21	0641	0.0	1247	3.0	1758	1.5	----	---
22	0017	4.5	0756	.2	1433	2.0	1841	2.1
23	0116	4.1	0933	.3	1709	2.6	2006	2.6
24	0238	3.9	1105	.2	1835	3.0	2236	2.6
25	0414	3.9	1209	0.0	1907	3.3	2350	2.3
26	0530	4.0	1256	-.2	1934	3.4	----	---
27	0046	1.9	0619	4.2	1331	-.3	1953	3.6
28	0122	1.6	0701	4.3	1400	-.3	2012	3.9
29	0154	1.2	0736	4.4	1423	-.2	2031	3.9
30	0222	.9	0808	4.4	1446	-.1	2049	4.0
31	0251	.6	0840	4.3	1505	.2	2107	4.2

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.


POINT MUGU TIDES
MARCH 1984
HEIGHT FEET
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DAY OF MONTH (1200 LOCAL STANDARD TIME)
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TABLE 10

POINT MUGU TIDES
APRIL 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0310	.5	0905	4.5	1518	.5	2118	4.7
2	0342	.3	0940	4.2	1537	.8	2140	4.8
3	0417	.2	1016	3.8	1556	1.2	2202	4.9
4	0456	.2	1057	3.4	1617	1.5	2227	4.8
5	0541	.3	1150	3.0	1635	1.9	2259	4.7
6	0640	.4	1312	2.6	1650	2.3	2342	4.6
7	0800	.4	----	---	----	---	----	---
8	0048	4.3	0936	.3	----	---	----	---
9	0227	4.3	1052	-.1	1810	3.4	2226	2.7
10	0405	4.5	1145	-.5	1831	3.7	2339	2.1
11	0519	4.8	1230	-.7	1857	4.2	----	---
12	0033	1.3	0618	5.1	1310	-.8	1922	4.7
13	0121	.6	0712	5.3	1344	-.7	1954	5.2
14	0208	-.1	0803	5.2	1419	-.4	2024	5.6
15	0253	-.6	0851	4.9	1453	.1	2056	5.8
16	0338	-.9	0942	4.5	1525	.6	2130	5.9
17	0424	-1.0	1034	4.0	1559	1.2	2206	5.8
18	0516	-.8	1134	3.6	1635	1.6	2243	5.4
19	0614	-.5	1248	3.1	1709	2.2	2325	5.0
20	0721	-.2	1440	2.9	1755	2.7	----	---
21	0019	4.5	0843	.1	1648	3.2	1944	3.0
22	0138	4.0	1002	.2	1745	3.5	2211	2.9
23	0321	3.8	1108	.1	1817	3.7	2330	2.4
24	0441	3.9	1153	.1	1839	3.9	----	---
25	0015	1.9	0540	4.0	1230	.2	1857	4.1
26	0054	1.4	0628	4.1	1259	.3	1916	4.4
27	0126	1.1	0707	4.1	1324	.4	1934	4.6
28	0154	.6	0744	4.1	1346	.6	1954	4.9
29	0226	.2	0819	4.0	1408	.9	2014	5.1
30	0258	-.1	0857	3.8	1430	1.1	2034	5.3

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 11

SAN NICOLAS ISLAND TIDES
APRIL 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0320	.4	0912	4.1	1528	.4	2125	4.3
2	0352	.3	0947	3.9	1547	.7	2147	4.4
3	0427	.2	1023	3.5	1606	1.1	2209	4.5
4	0506	.2	1104	3.1	1627	1.4	2234	4.4
5	0551	.3	1157	2.7	1645	1.8	2306	4.3
6	0650	.4	1319	2.4	1700	2.1	2349	4.2
7	0810	.4	----	---	----	---	----	---
8	0055	4.0	0946	.3	----	---	----	---
9	0234	4.0	1102	-.1	1817	3.1	2236	2.5
10	0412	4.1	1155	-.4	1838	3.4	2349	1.9
11	0526	4.4	1240	-.6	1904	3.9	----	---
12	0043	1.2	0625	4.7	1320	-.7	1929	4.3
13	0131	.5	0719	4.8	1354	-.6	2001	4.8
14	0218	-.1	0810	4.8	1429	-.4	2031	5.1
15	0303	-.5	0858	4.5	1503	.1	2103	5.3
16	0348	-.8	0949	4.1	1535	.5	2137	5.4
17	0434	-.9	1041	3.7	1609	1.1	2213	5.3
18	0526	-.7	1141	3.3	1645	1.5	2250	4.9
19	0624	-.4	1255	2.8	1719	2.0	2332	4.6
20	0731	-.2	1447	2.6	1805	2.5	----	---
21	0026	4.1	0853	.1	1655	2.9	1954	2.7
22	0145	3.7	1012	.2	1752	3.2	2221	2.6
23	0328	3.5	1118	.1	1824	3.4	2340	2.2
24	0448	3.6	1203	.1	1846	3.6	----	---
25	0025	1.8	0547	3.7	1240	.2	1904	3.8
26	0104	1.3	0635	3.8	1309	.3	1923	4.0
27	0136	1.0	0714	3.8	1334	.4	1941	4.2
28	0204	.5	0751	3.8	1356	.5	2001	4.5
29	0236	.2	0826	3.7	1418	.8	2021	4.7
30	0308	-.1	0904	3.5	1440	1.0	2041	4.8

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

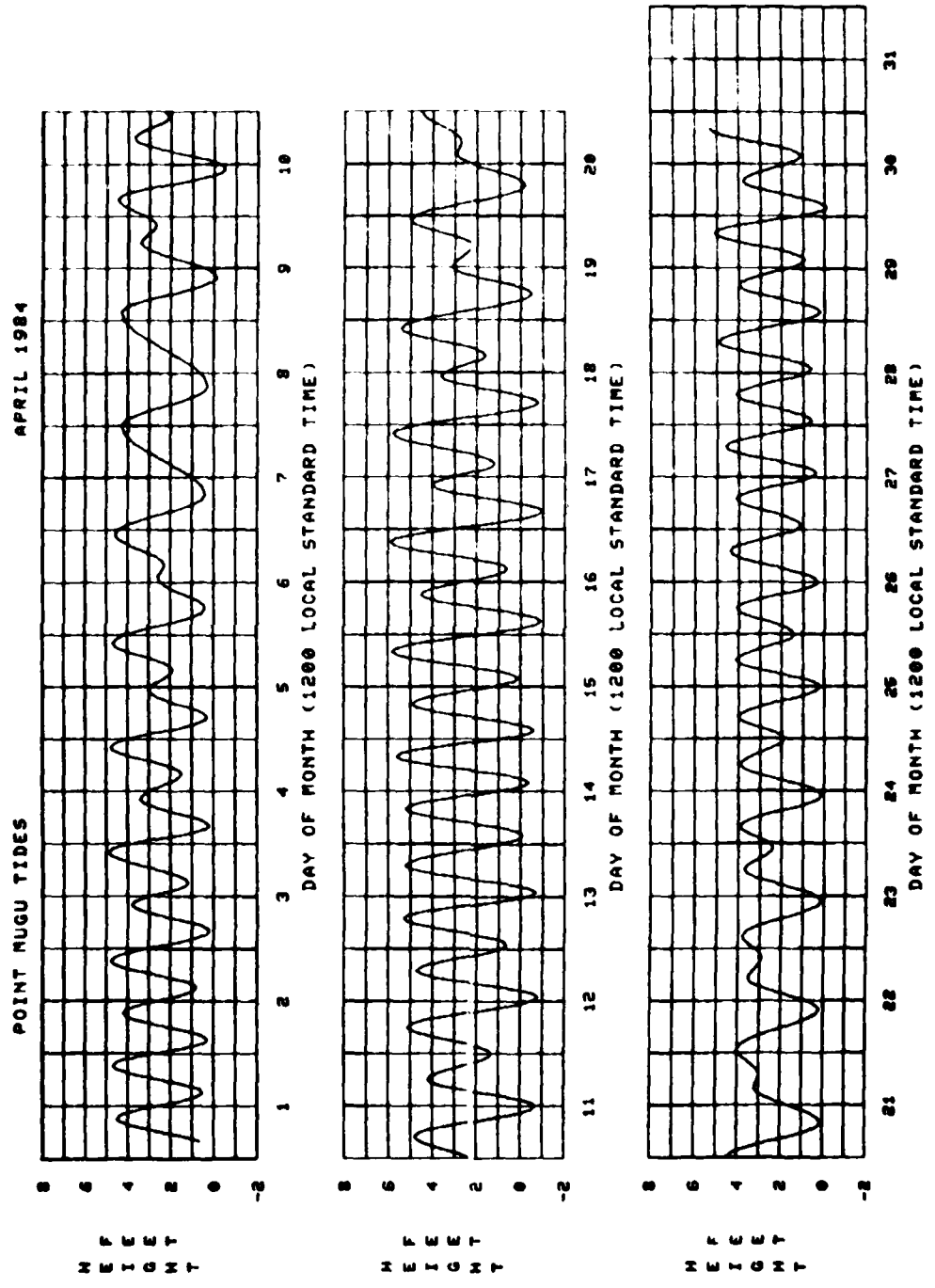

POINT NUGU TIDES
APRIL 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 12

POINT MUGU TIDES
MAY 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0330	-.3	0936	3.6	1454	1.3	2058	5.4
2	0408	-.4	1019	3.5	1516	1.7	2126	5.4
3	0449	-.5	1108	3.2	1542	2.0	2156	5.3
4	0536	-.4	1213	2.9	1611	2.3	2235	5.1
5	0635	-.3	1349	2.9	1646	2.7	2323	4.8
6	0744	-.2	1542	3.1	1811	3.0	----	---
7	0032	4.5	0900	-.2	1639	3.4	2041	3.0
8	0208	4.3	1007	-.2	1714	3.8	2226	2.4
9	0345	4.2	1100	-.3	1743	4.3	2333	1.7
10	0504	4.3	1145	-.2	1814	4.8	----	---
11	0028	.9	0607	4.3	1226	0.0	1846	5.3
12	0114	.1	0706	4.3	1305	.3	1917	5.8
13	0201	-.6	0800	4.3	1340	.6	1949	6.0
14	0247	-1.1	0852	4.1	1416	1.0	2024	6.1
15	0330	-1.2	0944	3.8	1451	1.4	2057	6.1
16	0417	-1.2	1038	3.6	1526	1.8	2135	6.0
17	0504	-1.1	1139	3.4	1605	2.2	2212	5.6
18	0556	-.8	1251	3.2	1644	2.6	2254	5.1
19	0652	-.4	1417	3.2	1739	2.9	2343	4.6
20	0757	-.1	1540	3.4	1915	3.1	----	---
21	0049	4.1	0858	.2	1639	3.6	2124	2.9
22	0215	3.7	0958	.4	1714	3.8	2250	2.5
23	0341	3.6	1045	.5	1740	4.1	2343	2.0
24	0454	3.5	1124	.7	1801	4.4	----	---
25	0025	1.4	0553	3.5	1159	.9	1823	4.7
26	0103	.9	0646	3.6	1228	1.1	1844	5.0
27	0135	.4	0729	3.6	1256	1.3	1906	5.3
28	0211	-.1	0812	3.6	1323	1.5	1933	5.5
29	0246	-.4	0857	3.5	1350	1.7	2002	5.7
30	0321	-.7	0940	3.5	1420	1.9	2031	5.9
31	0400	-.9	1028	3.4	1450	2.1	2133	5.9

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 13

SAN NICOLAS ISLAND TIDES
MAY 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0340	-.3	0943	3.3	1504	1.2	2105	4.9
2	0418	-.4	1026	3.2	1526	1.6	2133	4.9
3	0459	-.4	1115	2.9	1552	1.8	2203	4.8
4	0546	-.4	1220	2.6	1621	2.1	2242	4.7
5	0645	-.3	1356	2.6	1656	2.5	2330	4.4
6	0754	-.2	1549	2.8	1821	2.7	----	---
7	0039	4.1	0910	-.2	1646	3.1	2051	2.7
8	0215	4.0	1017	-.2	1721	3.5	2236	2.2
9	0352	3.9	1110	-.3	1750	4.0	2343	1.6
10	0511	4.0	1155	-.2	1821	4.4	----	---
11	0038	.9	0614	4.0	1236	0.0	1853	4.8
12	0124	.1	0713	4.0	1315	.3	1924	5.3
13	0211	-.5	0807	4.0	1350	.5	1956	5.5
14	0257	-1.0	0859	3.8	1426	.9	2031	5.6
15	0340	-1.1	0951	3.5	1501	1.3	2104	5.6
16	0427	-1.1	1045	3.3	1536	1.7	2142	5.5
17	0514	-1.0	1146	3.1	1615	2.0	2219	5.1
18	0606	-.7	1258	2.9	1654	2.4	2301	4.7
19	0702	-.4	1424	2.9	1749	2.6	2350	4.2
20	0807	-.1	1547	3.1	1925	2.8	----	---
21	0056	3.8	0908	.2	1646	3.3	2134	2.6
22	0222	3.4	1008	.4	1721	3.5	2300	2.3
23	0348	3.3	1055	.4	1747	3.8	2353	1.8
24	0501	3.2	1134	.6	1808	4.0	----	---
25	0035	1.3	0600	3.2	1209	.8	1830	4.3
26	0113	.8	0653	3.3	1238	1.0	1851	4.6
27	0145	.4	0736	3.3	1306	1.2	1913	4.8
28	0221	-.1	0819	3.3	1333	1.4	1940	5.0
29	0256	-.4	0904	3.2	1400	1.6	2009	5.2
30	0331	-.6	0947	3.2	1430	1.8	2038	5.4
31	0410	-.8	1035	3.1	1500	1.9	2140	5.4

* -- TIDE OCCURS ON NEXT DATE
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

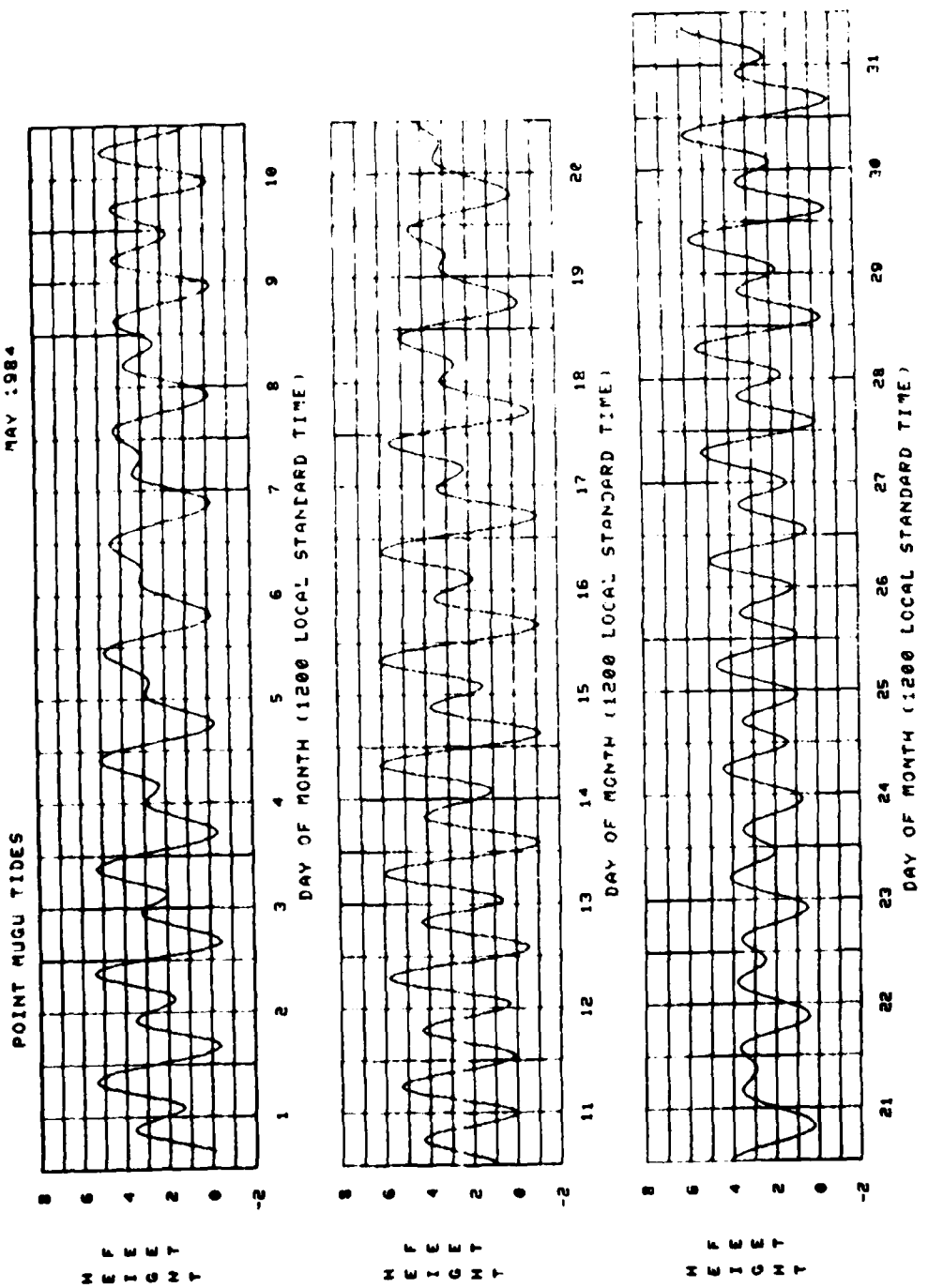

POINT MUGU TIDES
MAY 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 14

POINT MUGU TIDES
JUNE 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0444	-1.0	1123	3.3	1529	2.3	2145	5.8
2	0531	-.9	1222	3.3	1615	2.6	2230	5.6
3	0626	-.8	1331	3.4	1718	2.8	2323	5.2
4	0720	-.4	1436	3.6	1853	2.9	----	---
5	0030	4.7	0820	-.3	1533	3.9	2038	2.6
6	0156	4.2	0917	-.1	1615	4.3	2211	2.0
7	0326	3.9	1010	.3	1655	4.8	2324	1.2
8	0452	3.7	1058	.6	1732	5.3	----	---
9	0022	.5	0604	3.6	1144	.9	1809	5.8
10	0112	-.2	0709	3.6	1226	1.2	1846	6.0
11	0200	-.8	0809	3.6	1308	1.5	1922	6.2
12	0242	-1.1	0900	3.6	1347	1.8	2000	6.3
13	0327	-1.2	0952	3.6	1426	2.0	2036	6.2
14	0410	-1.2	1044	3.6	1505	2.2	2115	6.0
15	0452	-1.0	1130	3.5	1546	2.5	2151	5.7
16	0534	-.7	1226	3.5	1630	2.7	2233	5.3
17	0619	-.4	1321	3.5	1723	2.8	2314	4.8
18	0704	0.0	1420	3.6	1837	2.9	----	---
19	0003	4.3	0753	.3	1512	3.7	2011	2.9
20	0106	3.8	0840	.7	1554	3.9	2148	2.6
21	0228	3.4	0922	1.0	1630	4.2	2300	2.1
22	0358	3.2	1008	1.3	1658	4.5	2356	1.5
23	0519	3.1	1050	1.5	1727	4.8	----	---
24	0038	.9	0626	3.1	1128	1.8	1759	5.2
25	0120	.4	0723	3.2	1207	2.0	1828	5.5
26	0155	-.2	0811	3.4	1242	2.1	1900	5.9
27	0232	-.6	0855	3.5	1321	2.2	1939	6.0
28	0309	-1.0	0937	3.6	1403	2.2	2018	6.2
29	0351	-1.2	1022	3.6	1445	2.3	2056	6.3
30	0433	-1.2	1108	3.6	1535	2.3	2142	6.2

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 15

SAN NICOLAS ISLAND TIDES
JUNE 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0454	-.9	1130	3.0	1539	2.1	2152	5.3
2	0541	-.8	1229	3.0	1625	2.4	2237	5.1
3	0636	-.7	1338	3.1	1728	2.6	2330	4.8
4	0730	-.4	1443	3.3	1903	2.6	----	---
5	0037	4.3	0830	-.3	1540	3.6	2048	2.4
6	0203	3.9	0927	-.1	1622	4.0	2221	1.8
7	0333	3.6	1020	.3	1702	4.4	2334	1.1
8	0459	3.4	1108	.5	1739	4.8	----	---
9	0032	.4	0611	3.3	1154	.8	1816	5.3
10	0122	-.2	0716	3.3	1236	1.1	1853	5.5
11	0210	-.7	0816	3.3	1318	1.4	1929	5.7
12	0252	-1.0	0907	3.3	1357	1.7	2007	5.8
13	0337	-1.1	0959	3.3	1436	1.8	2043	5.7
14	0420	-1.1	1051	3.3	1515	2.0	2122	5.5
15	0502	-.9	1137	3.2	1556	2.3	2158	5.2
16	0544	-.6	1233	3.2	1640	2.5	2240	4.8
17	0629	-.4	1328	3.2	1733	2.6	2321	4.4
18	0714	0.0	1427	3.3	1847	2.6	----	---
19	0010	4.0	0803	.3	1519	3.4	2021	2.6
20	0113	3.5	0850	.6	1601	3.6	2158	2.4
21	0235	3.1	0932	.9	1637	3.9	2310	1.9
22	0405	2.9	1018	1.2	1705	4.1	0006	1.4*
23	0526	2.8	1100	1.4	1734	4.4	----	---
24	0048	.8	0633	2.8	1138	1.7	1806	4.8
25	0130	.4	0730	2.9	1217	1.8	1835	5.0
26	0205	-.2	0818	3.1	1252	1.9	1907	5.4
27	0242	-.5	0902	3.2	1331	2.0	1946	5.5
28	0319	-.9	0944	3.3	1413	2.0	2025	5.7
29	0401	-1.1	1029	3.3	1455	2.1	2103	5.8
30	0443	-1.1	1115	3.3	1545	2.1	2149	5.7

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

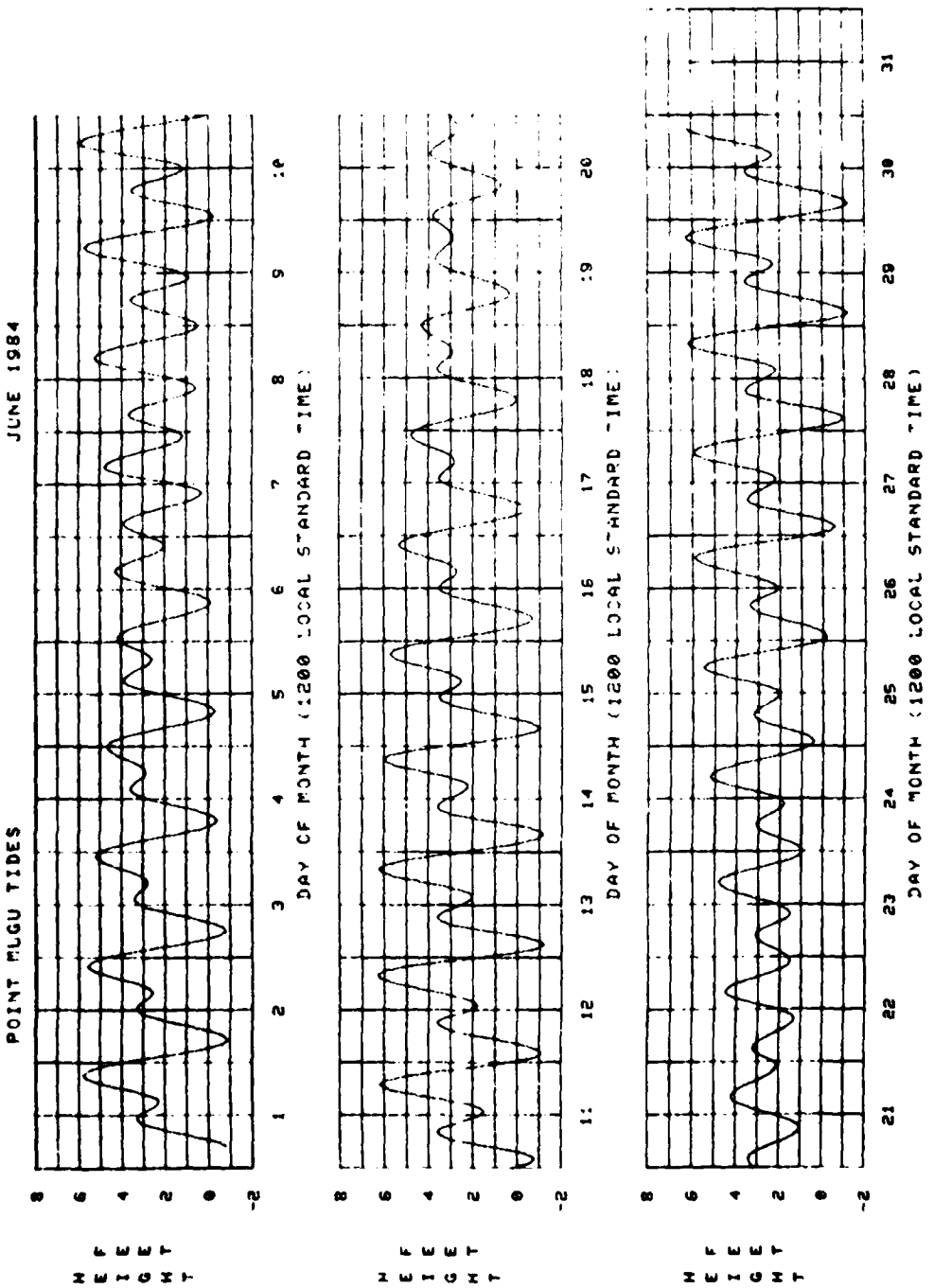

POINT MUGU TIDES
JUNE 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 16
POINT MUGU TIDES
JULY 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0518	-1.2	1157	3.7	1628	2.4	2230	5.9
2	0603	-.9	1245	3.9	1732	2.4	2323	5.4
3	0648	-.5	1336	4.1	1853	2.4	----	---
4	0026	4.8	0739	0.0	1429	4.4	2020	2.1
5	0144	4.1	0828	.5	1519	4.8	2152	1.6
6	0314	3.6	0924	1.0	1608	5.2	2312	1.0
7	0452	3.3	1016	1.4	1655	5.6	----	---
8	0018	.3	0620	3.3	1112	1.8	1740	5.9
9	0110	-.3	0727	3.5	1204	2.0	1825	6.0
10	0158	-.7	0823	3.6	1253	2.2	1907	6.2
11	0240	-.9	0908	3.6	1338	2.3	1947	6.2
12	0319	-1.0	0950	3.6	1417	2.3	2024	6.1
13	0356	-.9	1027	3.7	1458	2.3	2103	6.0
14	0432	-.8	1104	3.7	1537	2.4	2138	5.8
15	0507	-.5	1140	3.7	1620	2.4	2214	5.4
16	0539	-.2	1215	3.7	1702	2.5	2249	5.0
17	0613	.2	1254	3.8	1758	2.6	2328	4.5
18	0645	.6	1336	3.9	1902	2.6	----	---
19	0018	3.9	0719	1.1	1418	4.0	2028	2.4
20	0122	3.4	0756	1.5	1500	4.2	2207	2.1
21	0303	2.9	0841	1.9	1546	4.5	2320	1.5
22	0503	2.8	0933	2.2	1628	4.8	----	---
23	0016	1.0	0630	3.0	1032	2.4	1714	5.2
24	0058	.4	0726	3.2	1132	2.5	1757	5.6
25	0136	-.2	0808	3.5	1224	2.5	1839	6.0
26	0215	-.7	0842	3.6	1310	2.3	1923	6.3
27	0253	-1.1	0920	3.8	1358	2.2	2006	6.6
28	0332	-1.2	0956	4.0	1447	2.0	2051	6.6
29	0411	-1.2	1032	4.2	1535	1.8	2136	6.4
30	0452	-1.1	1111	4.4	1628	1.7	2225	6.0
31	0531	-.6	1153	4.6	1729	1.7	2318	5.4

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 17
SAN NICOLAS ISLAND TIDES
JULY 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0528	-1.1	1204	3.4	1638	2.2	2237	5.4
2	0613	-.8	1252	3.6	1742	2.2	2330	4.9
3	0658	-.4	1343	3.8	1903	2.2	----	---
4	0033	4.4	0749	0.0	1436	4.0	2030	1.9
5	0151	3.8	0838	.4	1526	4.4	2202	1.5
6	0321	3.3	0934	.9	1615	4.8	2322	.9
7	0459	3.0	1026	1.3	1702	5.1	----	---
8	0028	.3	0627	3.0	1122	1.7	1747	5.4
9	0120	-.3	0734	3.2	1214	1.8	1832	5.5
10	0208	-.6	0830	3.3	1303	2.0	1914	5.7
11	0250	-.8	0915	3.3	1348	2.1	1954	5.7
12	0329	-.9	0957	3.3	1427	2.1	2031	5.6
13	0406	-.8	1034	3.4	1508	2.1	2110	5.5
14	0442	-.7	1111	3.4	1547	2.2	2145	5.3
15	0517	-.4	1147	3.4	1630	2.2	2221	4.9
16	0549	-.2	1222	3.4	1712	2.3	2256	4.6
17	0623	.2	1301	3.5	1808	2.4	2335	4.1
18	0655	.5	1343	3.6	1912	2.4	----	---
19	0025	3.6	0729	1.0	1425	3.7	2038	2.2
20	0129	3.1	0806	1.4	1507	3.9	2217	1.9
21	0310	2.6	0851	1.8	1553	4.1	2330	1.4
22	0510	2.6	0943	2.0	1635	4.4	----	---
23	0026	.9	0637	2.7	1042	2.2	1721	4.8
24	0108	.4	0733	2.9	1142	2.3	1804	5.1
25	0146	-.2	0815	3.2	1234	2.3	1846	5.5
26	0225	-.6	0849	3.3	1320	2.1	1930	5.8
27	0303	-1.0	0927	3.5	1408	2.0	2013	6.1
28	0342	-1.1	1003	3.7	1457	1.8	2058	6.1
29	0421	-1.1	1039	3.9	1545	1.7	2143	5.9
30	0502	-1.0	1118	4.0	1638	1.6	2232	5.5
31	0541	-.5	1200	4.2	1739	1.6	2325	4.9

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

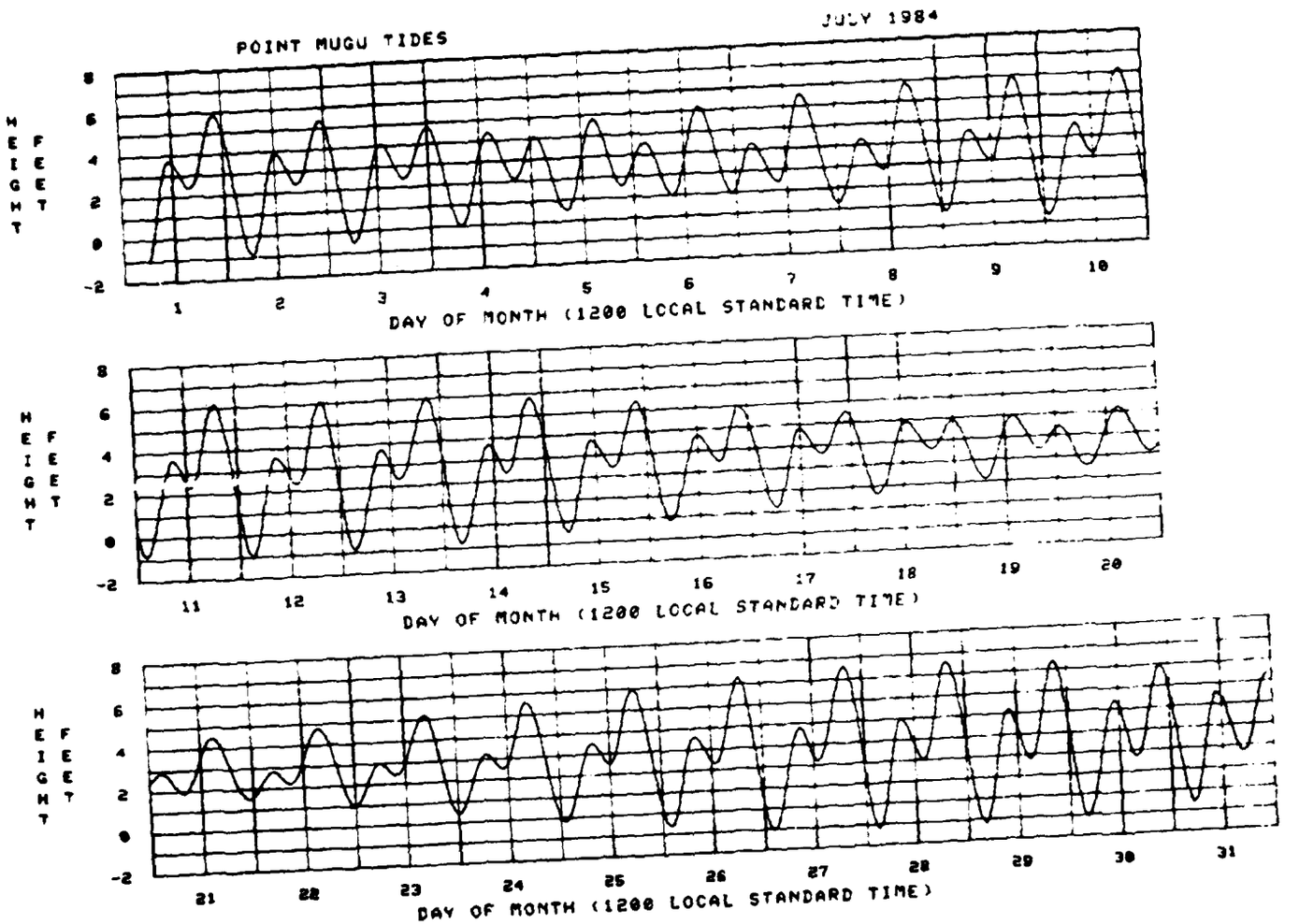

POINT MUGU TIDES
JULY 1984
HEIGHT FEET
8
6
4
2
0
-2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
11 12 13 14 15 16 17 18 19 20
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
21 22 23 24 25 26 27 28 29 30 31
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 18

POINT MUGU TIDES
AUGUST 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0611	-.1	1240	4.8	1838	1.6	----	---
2	0020	4.6	0653	.6	1330	5.0	2001	1.5
3	0136	3.8	0742	1.2	1423	5.1	2134	1.2
4	0322	3.3	0839	1.8	1525	5.3	2300	.7
5	0517	3.2	0947	2.3	1626	5.5	----	---
6	0012	.2	0647	3.4	1100	2.5	1725	5.7
7	0107	-.2	0742	3.6	1205	2.6	1817	5.9
8	0150	-.5	0824	3.8	1257	2.5	1902	6.0
9	0229	-.7	0856	3.9	1340	2.3	1940	6.0
10	0302	-.7	0925	4.0	1418	2.2	2016	6.0
11	0332	-.6	0953	4.0	1451	2.1	2051	5.9
12	0401	-.4	1018	4.1	1527	2.0	2123	5.7
13	0427	-.1	1043	4.2	1601	1.9	2153	5.4
14	0454	.2	1109	4.2	1638	1.9	2227	4.9
15	0517	.7	1136	4.2	1723	2.0	2305	4.4
16	0542	1.1	1206	4.3	1813	2.0	2347	3.8
17	0606	1.5	1240	4.3	1920	2.0	----	---
18	0043	3.3	0629	2.0	1322	4.4	2055	1.9
19	0232	2.8	0658	2.4	1418	4.5	2239	1.5
20	0532	2.8	0757	2.7	1533	4.7	2347	1.0
21	0652	3.2	0954	3.0	1639	5.0	----	---
22	0032	.4	0720	3.5	1122	2.8	1732	5.5
23	0113	-.2	0748	3.7	1218	2.5	1826	6.0
24	0152	-.7	0817	4.0	1308	2.1	1911	6.3
25	0227	-1.0	0845	4.3	1354	1.7	1957	6.6
26	0303	-1.1	0917	4.7	1440	1.3	2042	6.6
27	0340	-.9	0950	4.9	1529	1.1	2128	6.3
28	0414	-.6	1025	5.2	1621	.9	2220	5.8
29	0451	0.0	1102	5.4	1717	.8	2312	5.0
30	0529	.7	1142	5.4	1823	.8	----	---
31	0016	4.2	0608	1.3	1231	5.4	1939	.9

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 19

SAN NICOLAS ISLAND TIDES
AUGUST 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0621	-.1	1247	4.4	1848	1.5	----	---
2	0027	4.2	0703	.5	1337	4.6	2011	1.4
3	0143	3.5	0752	1.1	1430	4.7	2144	1.1
4	0329	3.0	0849	1.7	1532	4.8	2310	.6
5	0524	2.9	0957	2.1	1633	5.0	----	---
6	0022	.2	0654	3.1	1110	2.3	1732	5.2
7	0117	-.2	0749	3.3	1215	2.4	1824	5.4
8	0200	-.4	0831	3.5	1307	2.3	1909	5.5
9	0239	-.6	0903	3.6	1350	2.1	1947	5.5
10	0312	-.6	0932	3.7	1428	2.0	2023	5.5
11	0342	-.5	1000	3.7	1501	1.9	2058	5.4
12	0411	-.4	1025	3.8	1537	1.8	2130	5.2
13	0437	-.1	1050	3.9	1611	1.8	2200	4.9
14	0504	.2	1116	3.9	1648	1.8	2234	4.5
15	0527	.6	1143	3.9	1733	1.8	2312	4.0
16	0552	1.0	1213	4.0	1823	1.8	2354	3.5
17	0616	1.4	1247	4.0	1930	1.8	----	---
18	0050	3.0	0639	1.8	1329	4.0	2105	1.8
19	0239	2.6	0708	2.2	1425	4.1	2249	1.4
20	0539	2.6	0807	2.5	1540	4.3	2357	.9
21	0659	2.9	1004	2.7	1646	4.6	----	---
22	0042	.4	0727	3.2	1132	2.6	1739	5.0
23	0123	-.2	0755	3.4	1228	2.3	1833	5.5
24	0202	-.6	0824	3.7	1318	1.9	1918	5.8
25	0237	-.9	0852	4.0	1404	1.6	2004	6.1
26	0313	-1.0	0924	4.3	1450	1.2	2049	6.1
27	0350	-.8	0957	4.5	1539	1.0	2135	5.8
28	0424	-.5	1032	4.8	1631	.8	2227	5.3
29	0501	0.0	1109	4.9	1727	.7	2319	4.6
30	0539	.6	1149	4.9	1833	.7	----	---
31	0023	3.9	0618	1.2	1238	4.9	1949	.8

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

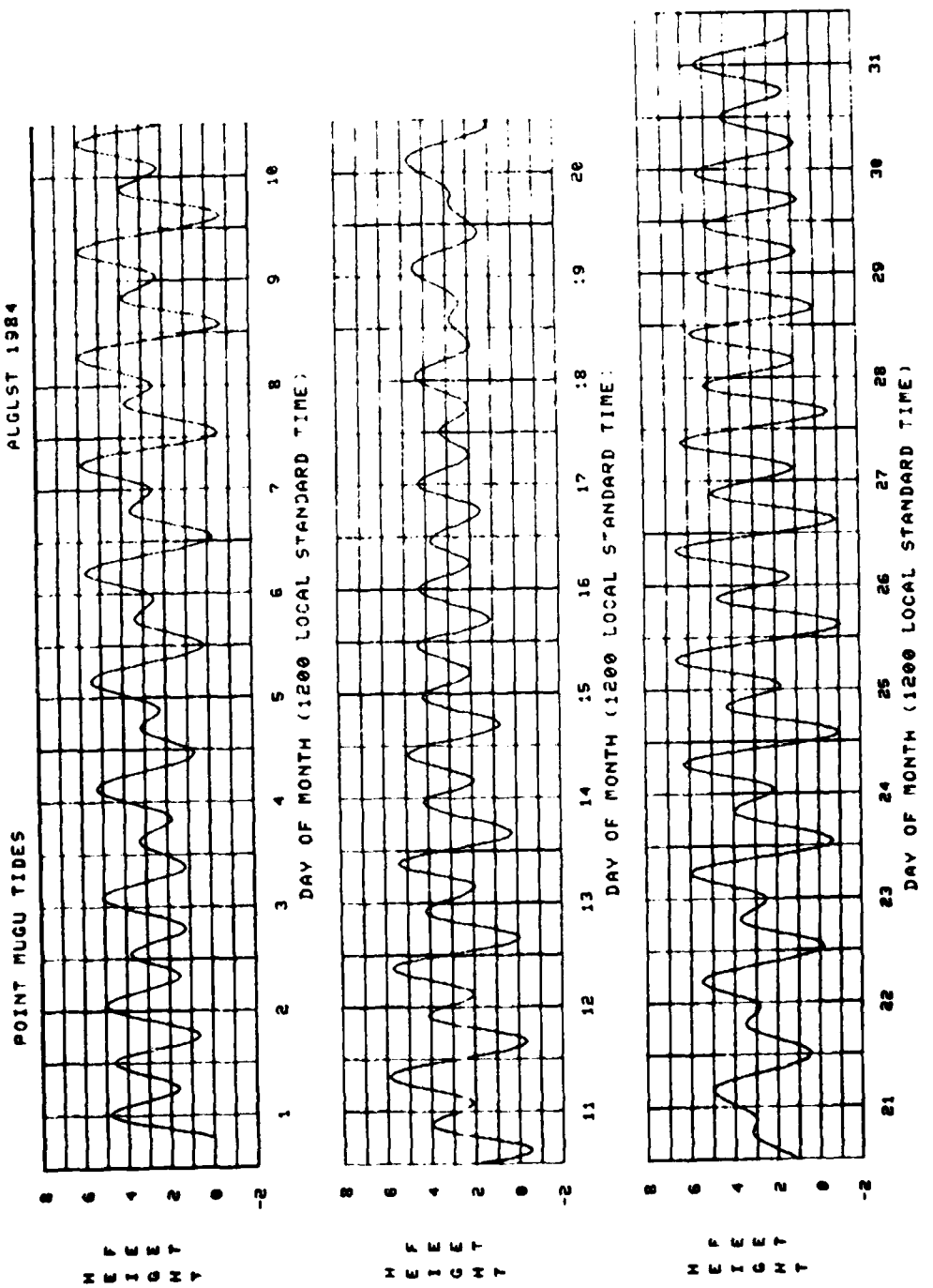

POINT MUGU TIDES
ALGLST 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 20

POINT MUGU TIDES
SEPTEMBER 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0142	3.5	0653	2.1	1330	5.2	2114	.8
2	0349	3.2	0802	2.7	1445	5.1	2247	.5
3	0548	3.4	0945	3.0	1605	5.1	2356	.2
4	0652	3.7	1116	2.9	1715	5.3	----	---
5	0049	-.1	0730	4.0	1217	2.6	1809	5.5
6	0131	-.3	0800	4.1	1305	2.3	1854	5.7
7	0204	-.3	0824	4.3	1341	2.0	1932	5.7
8	0232	-.2	0846	4.4	1412	1.8	2004	5.7
9	0258	-.1	0908	4.5	1443	1.5	2035	5.6
10	0320	.1	0926	4.6	1512	1.4	2107	5.3
11	0341	.4	0948	4.7	1544	1.2	2136	5.0
12	0403	.8	1008	4.8	1620	1.2	2212	4.6
13	0425	1.2	1030	4.8	1655	1.2	2247	4.1
14	0443	1.5	1053	4.8	1739	1.3	2340	3.6
15	0459	2.0	1120	4.7	1836	1.4	----	---
16	0035	3.1	0513	2.4	1158	4.6	2002	1.4
17	1256	4.5	2152	1.2	----	---	----	---
18	1430	4.5	2308	.8	----	---	----	---
19	0640	3.5	1002	3.3	1602	4.8	2359	.2
20	0651	3.8	1122	2.9	1712	5.3	----	---
21	0039	-.2	0713	4.1	1217	2.3	1807	5.8
22	0118	-.6	0738	4.5	1305	1.6	1859	6.0
23	0153	-.7	0803	5.0	1350	1.1	1945	6.2
24	0228	-.6	0835	5.4	1435	.5	2034	6.0
25	0302	-.3	0907	5.7	1521	.1	2122	5.7
26	0336	.2	0939	6.0	1609	-.1	2212	5.1
27	0411	.8	1017	6.0	1705	-.1	2310	4.4
28	0446	1.4	1057	5.9	1804	.1	----	---
29	0020	3.7	0525	2.1	1142	5.6	1920	.3
30	0158	3.4	0608	2.7	1239	5.2	2049	.5

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 21

SAN NICOLAS ISLAND TIDES
SEPTEMBER 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0149	3.2	0703	1.9	1337	4.8	2124	.7
2	0356	2.9	0812	2.5	1452	4.7	2257	.4
3	0555	3.1	0955	2.7	1612	4.7	0006	.2*
4	0659	3.4	1126	2.6	1722	4.8	----	---
5	0059	-.1	0737	3.7	1227	2.4	1816	5.0
6	0141	-.3	0807	3.8	1315	2.1	1901	5.2
7	0214	-.3	0831	4.0	1351	1.8	1939	5.2
8	0242	-.2	0853	4.0	1422	1.7	2011	5.2
9	0308	-.1	0915	4.1	1453	1.4	2042	5.1
10	0330	.1	0933	4.2	1522	1.3	2114	4.8
11	0351	.4	0955	4.3	1554	1.1	2143	4.6
12	0413	.7	1015	4.4	1630	1.1	2219	4.2
13	0435	1.1	1037	4.4	1705	1.1	2254	3.8
14	0453	1.4	1100	4.4	1749	1.2	2347	3.3
15	0509	1.8	1127	4.3	1846	1.3	----	---
16	0042	2.8	0523	2.2	1205	4.2	2012	1.3
17	1303	4.1	2202	1.1	----	---	----	---
18	1437	4.1	2318	.7	----	---	----	---
19	0647	3.2	1012	3.0	1609	4.4	0009	.2*
20	0658	3.5	1132	2.6	1719	4.8	----	---
21	0049	-.2	0720	3.8	1227	2.1	1814	5.3
22	0128	-.5	0745	4.1	1315	1.5	1906	5.5
23	0203	-.6	0810	4.6	1400	1.0	1952	5.7
24	0238	-.5	0842	4.9	1445	.4	2041	5.5
25	0312	-.3	0914	5.2	1531	.1	2129	5.2
26	0346	.2	0946	5.5	1619	-.1	2219	4.7
27	0421	.7	1024	5.5	1715	-.1	2317	4.0
28	0456	1.3	1104	5.4	1814	.1	----	---
29	0027	3.4	0535	1.9	1149	5.1	1930	.3
30	0205	3.1	0618	2.5	1246	4.8	2059	.4

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

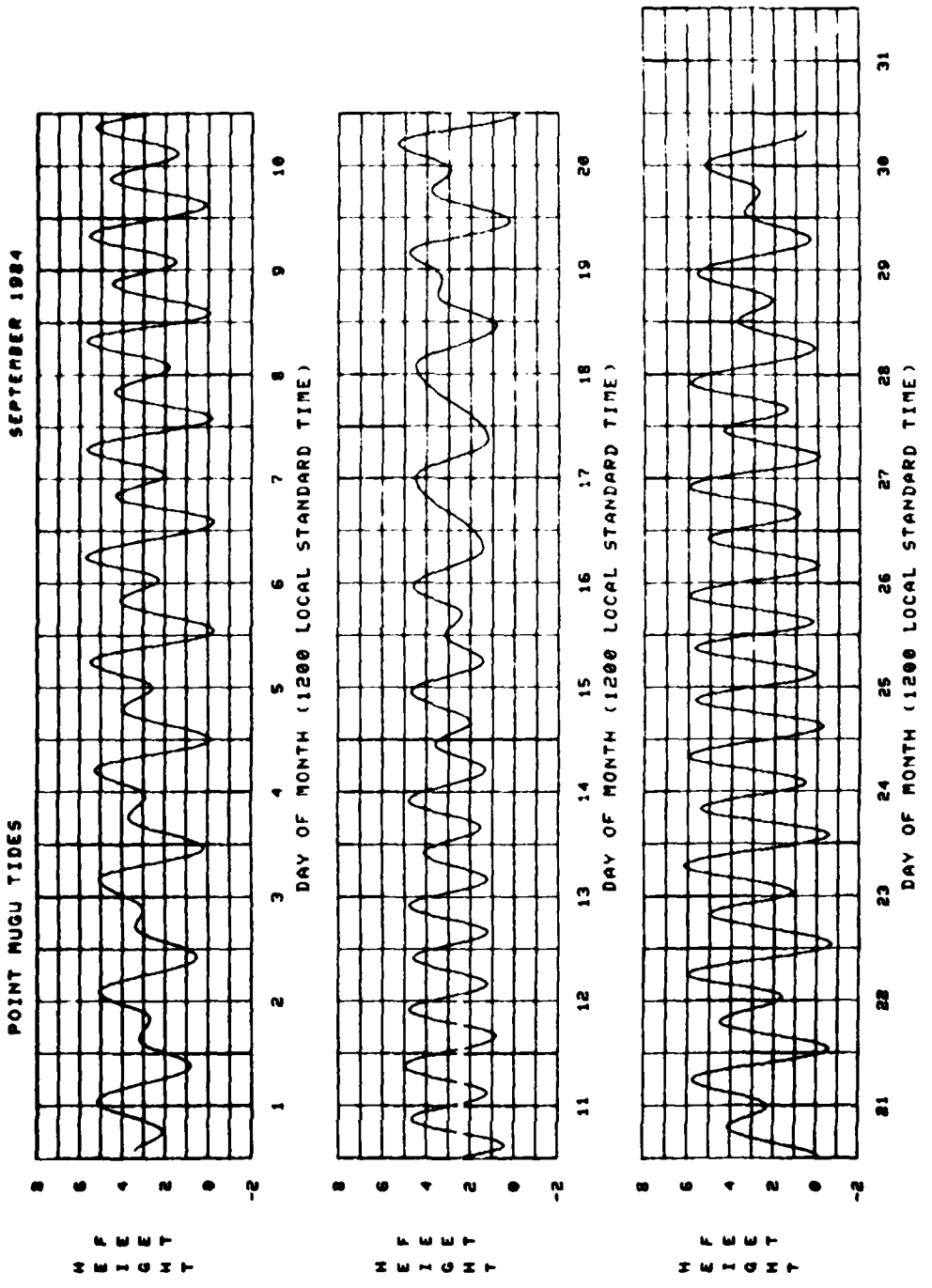

POINT MUGU TIDES
SEPTEMBER 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 22

POINT MUGU TIDES
OCTOBER 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0421	3.4	0738	3.2	1401	4.8	2218	.4
2	0551	3.7	1000	3.2	1537	4.7	2327	.2
3	0630	4.0	1130	2.9	1658	4.8	----	---
4	0018	.1	0700	4.3	1220	2.4	1753	5.0
5	0054	.1	0726	4.5	1258	2.0	1838	5.1
6	0126	.1	0745	4.7	1330	1.6	1916	5.1
7	0152	.3	0803	4.8	1359	1.2	1948	5.1
8	0216	.5	0822	5.0	1428	1.0	2020	4.9
9	0234	.7	0837	5.1	1500	.8	2052	4.7
10	0256	1.0	0858	5.3	1529	.6	2127	4.4
11	0314	1.3	0917	5.3	1601	.5	2201	4.0
12	0335	1.6	0942	5.3	1638	.5	2242	3.6
13	0348	2.0	1003	5.2	1721	.6	2333	3.3
14	0406	2.4	1032	5.1	1817	.8	----	---
15	0058	3.0	0417	2.7	1110	4.9	1933	.9
16	1206	4.7	2105	.8	----	---	----	---
17	1350	4.5	2223	.5	----	---	----	---
18	0554	3.7	1005	3.3	1533	4.6	2315	.1
19	0612	4.1	1119	2.6	1653	4.9	0001	-.1*
20	0631	4.6	1212	1.8	1753	5.2	----	---
21	0039	-.2	0659	5.1	1258	1.1	1847	5.4
22	0114	-.1	0724	5.6	1343	.3	1939	5.4
23	0150	.1	0756	6.0	1426	-.3	2028	5.2
24	0225	.5	0828	6.3	1512	-.8	2118	4.9
25	0258	1.0	0903	6.4	1601	-.9	2212	4.4
26	0332	1.4	0940	6.3	1653	-.8	2310	3.9
27	0408	2.0	1018	6.0	1749	-.5	----	---
28	0027	3.6	0449	2.6	1104	5.7	1856	-.2
29	0210	3.4	0538	3.0	1158	5.1	2014	.1
30	0407	3.6	0722	3.4	1315	4.6	2133	.3
31	0514	3.8	0950	3.3	1451	4.3	2240	.3

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 23

SAN NICOLAS ISLAND TIDES
OCTOBER 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0428	3.1	0748	2.9	1408	4.4	2228	.4
2	0558	3.4	1010	2.9	1544	4.3	2337	.2
3	0637	3.7	1140	2.6	1705	4.4	----	---
4	0028	.1	0707	4.0	1230	2.2	1800	4.6
5	0104	.1	0733	4.1	1308	1.8	1845	4.7
6	0136	.1	0752	4.3	1340	1.5	1923	4.7
7	0202	.3	0810	4.4	1409	1.1	1955	4.7
8	0226	.4	0829	4.6	1438	.9	2027	4.5
9	0244	.6	0844	4.7	1510	.7	2059	4.3
10	0306	.9	0905	4.8	1539	.5	2134	4.0
11	0324	1.2	0924	4.8	1611	.4	2208	3.7
12	0345	1.5	0949	4.8	1648	.4	2249	3.3
13	0358	1.8	1010	4.8	1731	.5	2340	3.0
14	0416	2.2	1039	4.7	1827	.7	----	---
15	0105	2.7	0427	2.5	1117	4.5	1943	.8
16	1213	4.3	2115	.7	----	---	----	---
17	1357	4.1	2233	.4	----	---	----	---
18	0601	3.4	1015	3.0	1540	4.2	2325	.1
19	0619	3.8	1129	2.4	1700	4.5	0011	-.1*
20	0638	4.2	1222	1.7	1800	4.8	----	---
21	0049	-.2	0706	4.7	1308	1.0	1854	4.9
22	0124	-.1	0731	5.1	1353	.3	1946	4.9
23	0200	.1	0803	5.5	1436	-.3	2035	4.8
24	0235	.4	0835	5.8	1522	-.7	2125	4.5
25	0308	.9	0910	5.9	1611	-.8	2219	4.0
26	0342	1.3	0947	5.8	1707	-.7	2317	3.6
27	0418	1.8	1025	5.5	1759	-.4	----	---
28	0034	3.3	0459	2.4	1111	5.2	1906	-.2
29	0217	3.1	0548	2.7	1205	4.7	2024	.1
30	0414	3.3	0732	3.1	1322	4.2	2143	.3
31	0521	3.5	1000	3.0	1458	4.0	2250	.3

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

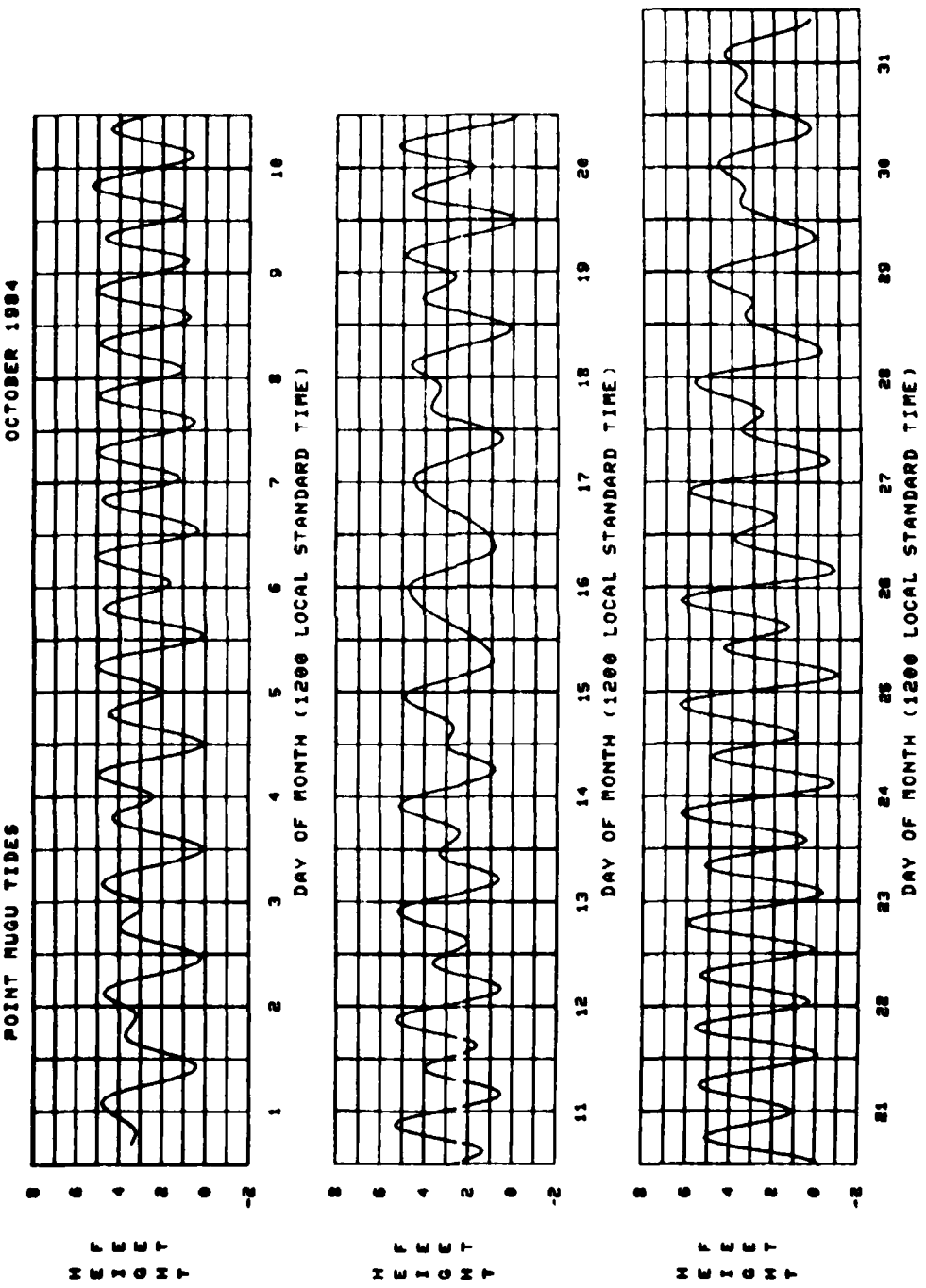

POINT MUGU TIDES
OCTOBER 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)
8 6 4 2 0 -2
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31

TABLE 24

POINT MUGU TIDES
NOVEMBER 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0553	4.2	1113	2.8	1621	4.2	2330	.4
2	0616	4.4	1205	2.2	1724	4.3	0007	.5*
3	0641	4.7	1241	1.7	1815	4.3	----	---
4	0038	.6	0659	4.9	1315	1.2	1854	4.3
5	0107	.8	0718	5.1	1347	.9	1934	4.3
6	0129	1.1	0736	5.4	1416	.5	2008	4.2
7	0149	1.2	0755	5.5	1445	.2	2044	4.0
8	0210	1.5	0816	5.7	1517	0.0	2123	3.8
9	0234	1.8	0839	5.7	1552	-.1	2205	3.6
10	0256	2.1	0904	5.7	1630	-.1	2251	3.4
11	0318	2.3	0935	5.6	1715	-.1	2354	3.2
12	0343	2.6	1008	5.4	1808	.1	----	---
13	0124	3.1	0408	2.9	1051	5.2	1912	.2
14	1152	4.8	2023	.2	----	---	----	---
15	0422	3.6	0744	3.4	1321	4.5	2130	.2
16	0451	4.0	0952	3.0	1504	4.3	2226	.2
17	0519	4.5	1108	2.2	1630	4.3	2314	.3
18	0548	5.0	1205	1.3	1740	4.4	2356	.4
19	0617	5.6	1254	.5	1839	4.5	----	---
20	0035	.6	0650	6.0	1336	-.3	1935	4.4
21	0110	1.0	0724	6.4	1423	-.9	2029	4.3
22	0150	1.2	0758	6.6	1509	-1.2	2121	4.1
23	0228	1.6	0835	6.7	1555	-1.2	2217	3.9
24	0306	2.0	0912	6.5	1644	-1.2	2313	3.6
25	0343	2.3	0953	6.1	1733	-.9	----	---
26	0021	3.6	0427	2.7	1038	5.7	1829	-.5
27	0141	3.5	0523	3.0	1127	5.1	1930	-.1
28	0307	3.6	0651	3.3	1226	4.5	2035	.3
29	0409	3.8	0853	3.2	1345	4.0	2134	.5
30	0451	4.1	1034	2.7	1521	3.7	2226	.8

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 25

SAN NICOLAS ISLAND TIDES
NOVEMBER 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0600	3.9	1123	2.6	1628	3.9	2340	.4
2	0623	4.0	1215	2.0	1731	4.0	0017	.4*
3	0648	4.3	1251	1.6	1822	4.0	----	---
4	0048	.5	0706	4.5	1325	1.1	1901	4.0
5	0117	.7	0725	4.7	1357	.8	1941	4.0
6	0139	1.0	0743	4.9	1426	.4	2015	3.9
7	0159	1.1	0802	5.0	1455	.2	2051	3.7
8	0220	1.4	0823	5.2	1527	0.0	2130	3.5
9	0244	1.7	0846	5.2	1602	-.1	2212	3.3
10	0306	1.9	0911	5.2	1640	-.1	2258	3.1
11	0328	2.1	0942	5.1	1725	-.1	0001	2.9*
12	0353	2.4	1015	4.9	1818	.1	----	---
13	0131	2.8	0418	2.6	1058	4.8	1922	.2
14	1159	4.4	2033	.2	----	---	----	---
15	0429	3.3	0754	3.1	1328	4.1	2140	.2
16	0458	3.7	1002	2.7	1511	4.0	2236	.2
17	0526	4.1	1118	2.0	1637	4.0	2324	.3
18	0555	4.6	1215	1.2	1747	4.0	0006	.4*
19	0624	5.1	1304	.4	1846	4.1	----	---
20	0045	.5	0657	5.5	1346	-.3	1942	4.0
21	0120	.9	0731	5.9	1433	-.8	2036	4.0
22	0200	1.1	0805	6.1	1519	-1.1	2128	3.8
23	0238	1.5	0842	6.2	1605	-1.1	2224	3.6
24	0316	1.8	0919	6.0	1654	-1.1	2320	3.3
25	0353	2.1	1000	5.6	1743	-.8	----	---
26	0028	3.3	0437	2.5	1045	5.4	1839	-.4
27	0148	3.2	0533	2.7	1134	4.7	1940	-.1
28	0314	3.3	0701	3.0	1233	4.1	2045	.3
29	0416	3.5	0903	2.9	1352	3.7	2144	.4
30	0458	3.8	1044	2.5	1528	3.4	2236	.7

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

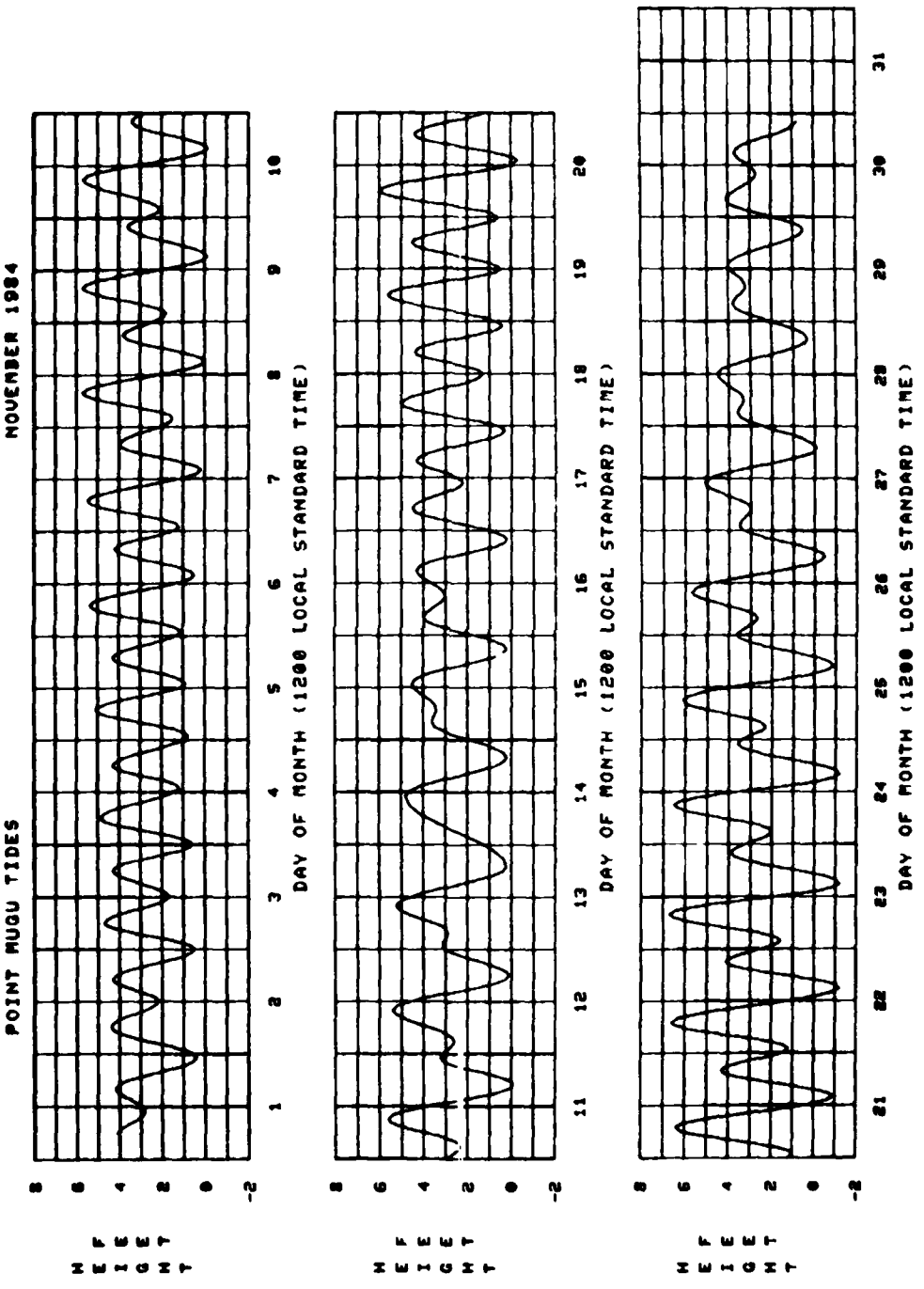

POINT MUGU TIDES
NOVEMBER 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 26

POINT MUGU TIDES
DECEMBER 1984
34 DEG 06 MIN N, 119 DEG 06 MIN W - OCEAN PIER

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0523	4.4	1138	2.2	1637	3.6	2308	1.0
2	0548	4.7	1220	1.6	1743	3.6	2343	1.2
3	0609	4.9	1257	1.1	1836	3.6	----	---
4	0012	1.4	0634	5.2	1331	.6	1923	3.6
5	0041	1.6	0655	5.5	1403	.1	2008	3.6
6	0108	1.8	0721	5.7	1436	-.3	2047	3.6
7	0137	1.9	0746	5.9	1508	-.5	2126	3.6
8	0203	2.1	0818	6.0	1546	-.7	2212	3.5
9	0235	2.3	0848	6.0	1625	-.7	2257	3.4
10	0309	2.4	0924	6.0	1707	-.7	2352	3.4
11	0348	2.6	1006	5.7	1755	-.6	----	---
12	0051	3.4	0440	2.8	1051	5.4	1848	-.4
13	0154	3.6	0557	3.0	1150	4.9	1941	-.1
14	0253	3.8	0741	2.9	1303	4.4	2038	.2
15	0344	4.2	0931	2.4	1436	3.9	2133	.5
16	0426	4.7	1052	1.6	1615	3.6	2225	.9
17	0504	5.3	1156	.8	1737	3.6	2314	1.2
18	0543	5.8	1248	0.0	1846	3.6	2359	1.4
19	0622	6.1	1339	-.7	1945	3.7	----	---
20	0044	1.6	0700	6.4	1423	-1.2	2040	3.7
21	0127	1.8	0740	6.6	1505	-1.3	2132	3.7
22	0209	2.0	0819	6.6	1550	-1.4	2217	3.7
23	0251	2.1	0900	6.4	1632	-1.2	2306	3.6
24	0334	2.3	0941	6.0	1714	-1.0	2356	3.6
25	0418	2.5	1019	5.7	1757	-.6	----	---
26	0045	3.6	0507	2.7	1101	5.1	1843	-.2
27	0139	3.6	0613	2.8	1147	4.5	1925	.3
28	0236	3.7	0737	2.8	1242	3.9	2011	.7
29	0325	3.9	0918	2.6	1358	3.4	2059	1.2
30	0407	4.1	1050	2.1	1541	3.0	2148	1.4
31	0444	4.4	1156	1.5	1716	2.9	2233	1.7

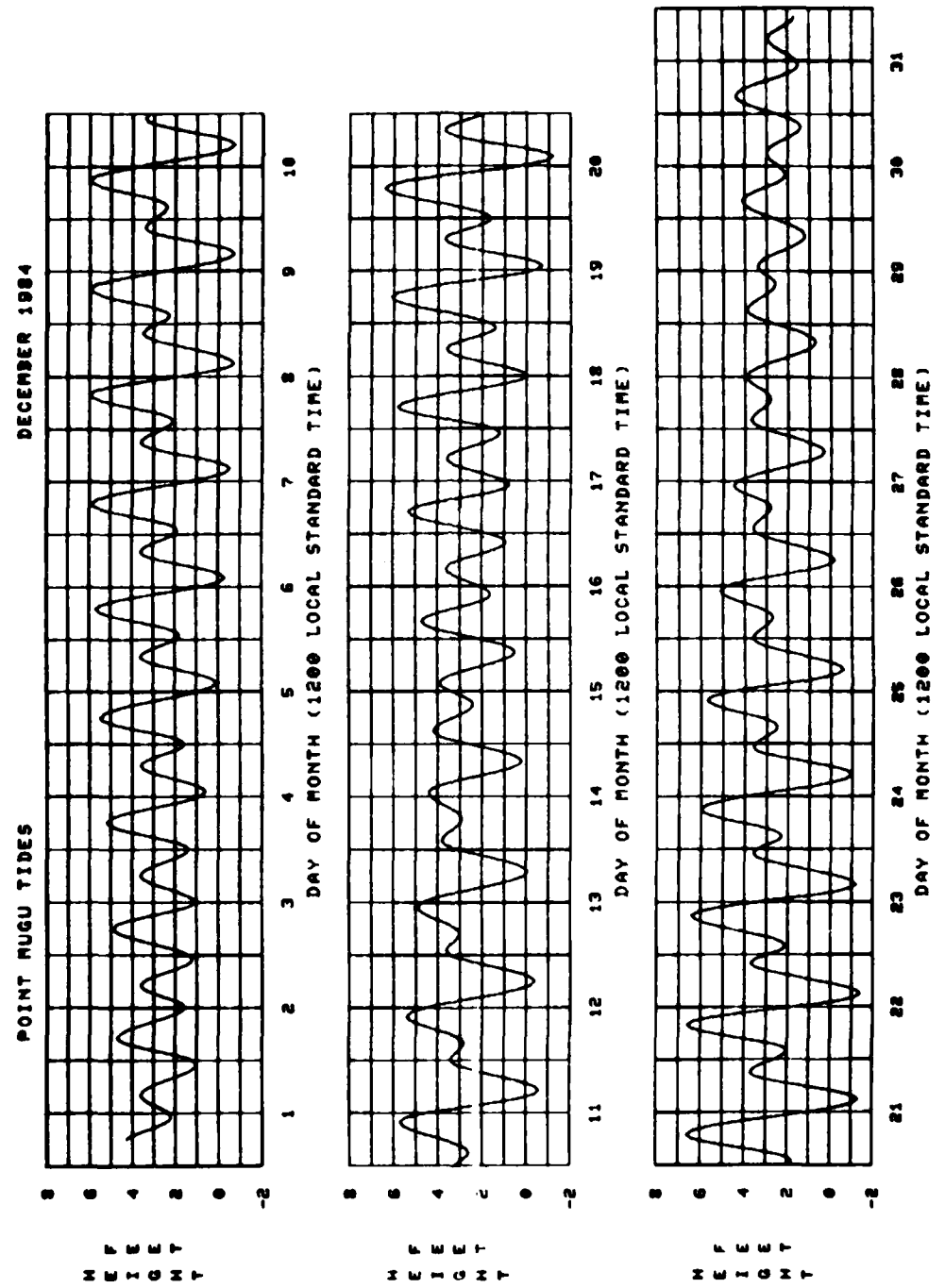
* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.

TABLE 27

SAN NICOLAS ISLAND TIDES
DECEMBER 1984
33 DEG 16 MIN N, 119 DEG 30 MIN W - CENTRAL PART NE COAST

DATE	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT	TIME PST	HGT FT
1	0530	4.0	1148	2.0	1644	3.3	2318	.9
2	0555	4.3	1230	1.5	1750	3.3	2353	1.1
3	0616	4.5	1307	1.0	1843	3.3	----	---
4	0022	1.3	0641	4.8	1341	.5	1930	3.3
5	0051	1.5	0702	5.0	1413	.1	2015	3.3
6	0118	1.7	0728	5.2	1446	-.3	2054	3.3
7	0147	1.8	0753	5.4	1518	-.4	2133	3.3
8	0213	1.9	0825	5.5	1556	-.6	2219	3.2
9	0245	2.1	0855	5.5	1635	-.6	2304	3.1
10	0319	2.2	0931	5.5	1717	-.6	2359	3.1
11	0358	2.4	1013	5.2	1805	-.5	----	---
12	0058	3.1	0450	2.6	1058	4.9	1858	-.4
13	0201	3.3	0607	2.7	1157	4.5	1951	-.1
14	0300	3.5	0751	2.6	1310	4.0	2048	.2
15	0351	3.9	0941	2.2	1443	3.6	2143	.4
16	0433	4.3	1102	1.5	1622	3.3	2235	.8
17	0511	4.8	1206	.7	1744	3.3	2324	1.1
18	0550	5.3	1258	0.0	1853	3.3	0009	1.3*
19	0629	5.6	1349	-.6	1952	3.4	----	---
20	0054	1.5	0707	5.9	1433	-1.1	2047	3.4
21	0137	1.7	0747	6.1	1515	-1.2	2139	3.4
22	0219	1.8	0826	6.1	1600	-1.3	2224	3.4
23	0301	1.9	0907	5.9	1642	-1.1	2313	3.3
24	0344	2.1	0948	5.5	1724	-.9	0003	3.3*
25	0428	2.3	1026	5.2	1807	-.5	----	---
26	0052	3.3	0517	2.5	1108	4.7	1853	-.2
27	0146	3.3	0623	2.6	1154	4.1	1935	.3
28	0243	3.4	0747	2.6	1249	3.6	2021	.6
29	0332	3.6	0928	2.4	1405	3.1	2109	1.1
30	0414	3.8	1100	1.9	1548	2.7	2158	1.3
31	0451	4.0	1206	1.4	1723	2.6	2243	1.6

* -- TIDE OCCURS ON NEXT DATE.
ADD ONE HOUR WHEN DAYLIGHT SAVINGS TIME IS IN EFFECT.


POINT RUGU TIDES
DECEMBER 1984
HEIGHT
FEET
8
6
4
2
0
-2
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2
3
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31
DAY OF MONTH (1200 LOCAL STANDARD TIME)

Table 28. Moonrise and Moonset, Barking Sands, Hawaii, 1984.

Date	January		February		March		April		May		June		Date
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	
1	0606	1705	0723	1831	0641	1810	0654	1925	0637	1957	0742	2145	1
2	0702	1756	0804	1923	0716	1900	0726	2015	0717	2055	0842	2241	2
3	0754	1850	0841	2014	0749	1949	0801	2108	0802	2154	0946	2332	3
4	0842	1944	0915	2104	0820	2038	0837	2203	0853	2253	1050	------	4
5	0926	2037	0947	2153	0852	2128	0919	2300	0949	2350	1152	0019	5
6	1005	2129	1019	2242	0925	2219	1005	2359	1049	------	1254	0101	6
7	1041	2220	1051	2332	0959	2312	1057	------	1152	0044	1354	0141	7
8	1115	2309	1124	------	1038	------	1154	0057	1256	0134	1453	0219	8
9	1147	2358	1200	0024	1120	0007	1256	0154	1359	0219	1553	0258	9
10	1219	------	1241	0118	1209	0106	1401	0248	1501	0301	1654	0338	10
11	1252	0048	1327	0216	1304	0205	1506	0337	1602	0341	1756	0420	11
12	1327	0140	1420	0317	1405	0305	1611	0423	1703	0421	1858	0507	12
13	1406	0234	1520	0419	1511	0403	1715	0505	1806	0500	1959	0557	13
14	1450	0332	1626	0521	1618	0457	1818	0546	1908	0543	2055	0652	14
15	1541	0433	1734	0619	1726	0546	1921	0627	2012	0628	2147	0748	15
16	1639	0537	1843	0712	1832	0632	2025	0709	2114	0717	2232	0845	16
17	1743	0640	1950	0800	1936	0715	2128	0753	2213	0810	2313	0940	17
18	1851	0741	2055	0844	2040	0756	2230	0840	2307	0905	2350	1034	18
19	2000	0837	2158	0925	2142	0837	2330	0930	2355	1001	------	1125	19
20	2107	0926	2258	1006	2244	0920	------	1023	------	1057	0023	1215	20
21	2210	1011	2358	1046	2346	1004	0026	1118	0038	1151	0055	1304	21
22	2311	1052	------	1127	------	1051	0116	1213	0117	1243	0126	1353	22
23	------	1131	0058	1211	0045	1141	0201	1307	0152	1333	0158	1444	23
24	0010	1210	0156	1258	0141	1234	0242	1400	0224	1423	0231	1536	24
25	0108	1249	0253	1348	0233	1327	0318	1451	0256	1512	0308	1632	25
26	0206	1330	0346	1440	0321	1421	0352	1541	0327	1602	0350	1731	26
27	0304	1414	0436	1533	0403	1514	0424	1630	0400	1654	0437	1832	27
28	0401	1501	0522	1626	0442	1606	0456	1719	0435	1748	0531	1933	28
29	0456	1551	0603	1719	0518	1656	0527	1810	0514	1845	0630	2032	29
30	0549	1644	------	------	0551	1746	0601	1902	0557	1945	0734	2127	30
31	0638	1737	------	------	0623	1835	------	------	0647	2045	------	------	31

Date	July		August		September		October		November		December		Date
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	
1	0840	2216	1041	2258	1236	2344	1326	------	1424	0055	1403	0122	1
2	0945	2301	1141	2337	1337	------	1418	0016	1459	0148	1434	0211	2
3	1048	2342	1241	------	1435	0034	1505	0112	1532	0239	1505	0259	3
4	1148	------	1342	0017	1530	0127	1547	0208	1603	0328	1537	0349	4
5	1248	0020	1442	0100	1621	0222	1624	0301	1633	0417	1612	0440	5
6	1347	0058	1542	0147	1706	0318	1658	0353	1705	0506	1650	0533	6
7	1447	0137	1639	0237	1746	0412	1730	0444	1738	0556	1731	0629	7
8	1547	0218	1733	0331	1822	0506	1801	0533	1814	0648	1823	0727	8
9	1648	0302	1822	0427	1856	0557	1831	0621	1854	0742	1918	0826	9
10	1748	0350	1906	0523	1927	0647	1903	0710	1939	0838	2018	0922	10
11	1845	0442	1946	0618	1958	0736	1937	0801	2029	0935	2120	1016	11
12	1938	0538	2021	0711	2029	0825	2014	0853	2125	1032	2222	1104	12
13	2026	0634	2054	0802	2101	0914	2055	0947	2224	1127	2323	1149	13
14	2109	0730	2126	0851	2136	1004	2141	1043	2326	1218	------	1229	14
15	2147	0825	2156	0940	2214	1057	2233	1140	------	1306	0023	1308	15
16	2222	0917	2228	1029	2257	1152	2330	1237	0028	1349	0123	1345	16
17	2254	1008	2301	1118	2346	1249	------	1331	0129	1429	0223	1424	17
18	2325	1057	2337	1210	------	1347	0031	1422	0231	1508	0324	1504	18
19	2356	1145	------	1304	0041	1444	0135	1509	0332	1547	0427	1548	19
20	------	1235	0018	1401	0142	1539	0239	1553	0435	1628	0531	1637	20
21	0029	1326	0104	1500	0246	1631	0343	1634	0539	1711	0636	1732	21
22	0103	1419	0157	1600	0352	1718	0447	1715	0644	1759	0739	1830	22
23	0142	1515	0256	1658	0459	1802	0551	1755	0751	1851	0837	1930	23
24	0226	1615	0401	1753	0604	1844	0655	1838	0856	1948	0929	2030	24
25	0316	1716	0508	1843	0709	1925	0801	1924	0956	2047	1014	2127	25
26	0413	1817	0616	1930	0814	2006	0907	2014	1051	2147	1054	2221	26
27	0516	1914	0722	2012	0918	2050	1012	2108	1139	2244	1130	2313	27
28	0623	2007	0826	2053	1023	2137	1114	2205	1221	2339	1202	------	28
29	0730	2055	0929	2133	1126	2227	1211	2303	1258	------	1233	0003	29
30	0836	2138	1032	2214	1228	2320	1301	------	1332	0032	1304	0051	30
31	0939	2219	1134	2258	------	------	1345	0000	------	------	1335	0140	31

TABLE 29

PORT ALLEN TIDES
JANUARY 1984
21 DEG 54 MIN N, 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0248	2.0	1032	.2	1417	.4	1956	-.2
2	0325	2.0	1111	.2	1459	.4	2033	-.2
3	0359	2.0	1145	.2	1537	.4	2105	-.1
4	0432	2.0	1220	.2	1621	.4	2140	-.1
5	0507	1.9	1251	.2	1703	.5	2216	0.0
6	0538	1.7	1325	.2	1752	.5	2255	.2
7	0610	1.6	1357	.2	1853	.6	2336	.3
8	0642	1.4	1429	.2	2007	.7	----	---
9	0035	.4	0718	1.3	1501	.1	2123	.8
10	0201	.6	0800	1.1	1536	.1	2234	1.0
11	0406	.7	0848	.9	1610	.1	----	---
12	2330	1.2*	0614	.6	0947	.8	1649	0.0
13	0016	1.4	0740	.5	1100	.6	1728	-.1
14	0101	1.6	0839	.3	1209	.5	1810	-.2
15	0142	1.9	0924	.2	1308	.5	1855	-.2
16	0224	2.0	1003	.1	1400	.4	1939	-.3
17	0304	2.1	1042	.1	1451	.5	2025	-.3
18	0346	2.1	1119	0.0	1541	.5	2113	-.3
19	0426	2.1	1156	0.0	1634	.6	2159	-.2
20	0508	2.0	1236	-.1	1730	.6	2251	0.0
21	0547	1.9	1313	-.1	1833	.8	----	---
22	2350	.2*	0627	1.6	1352	-.1	1943	.9
23	0059	.3	0709	1.4	1431	-.1	2106	1.0
24	0232	.5	0751	1.1	1511	-.1	2222	1.2
25	0443	.6	0842	.9	1557	-.1	----	---
26	2331	1.4*	0658	.5	0954	.6	1643	-.1
27	0028	1.6	0817	.3	1125	.5	1733	-.1
28	0115	1.7	0906	.3	1236	.4	1818	-.1
29	0157	1.8	0945	.2	1332	.4	1905	-.1
30	0235	1.9	1019	.2	1416	.4	1946	-.1
31	0309	1.9	1042	.1	1455	.5	2025	-.1

* -- TIDE OCCURS ON PREVIOUS DATE.

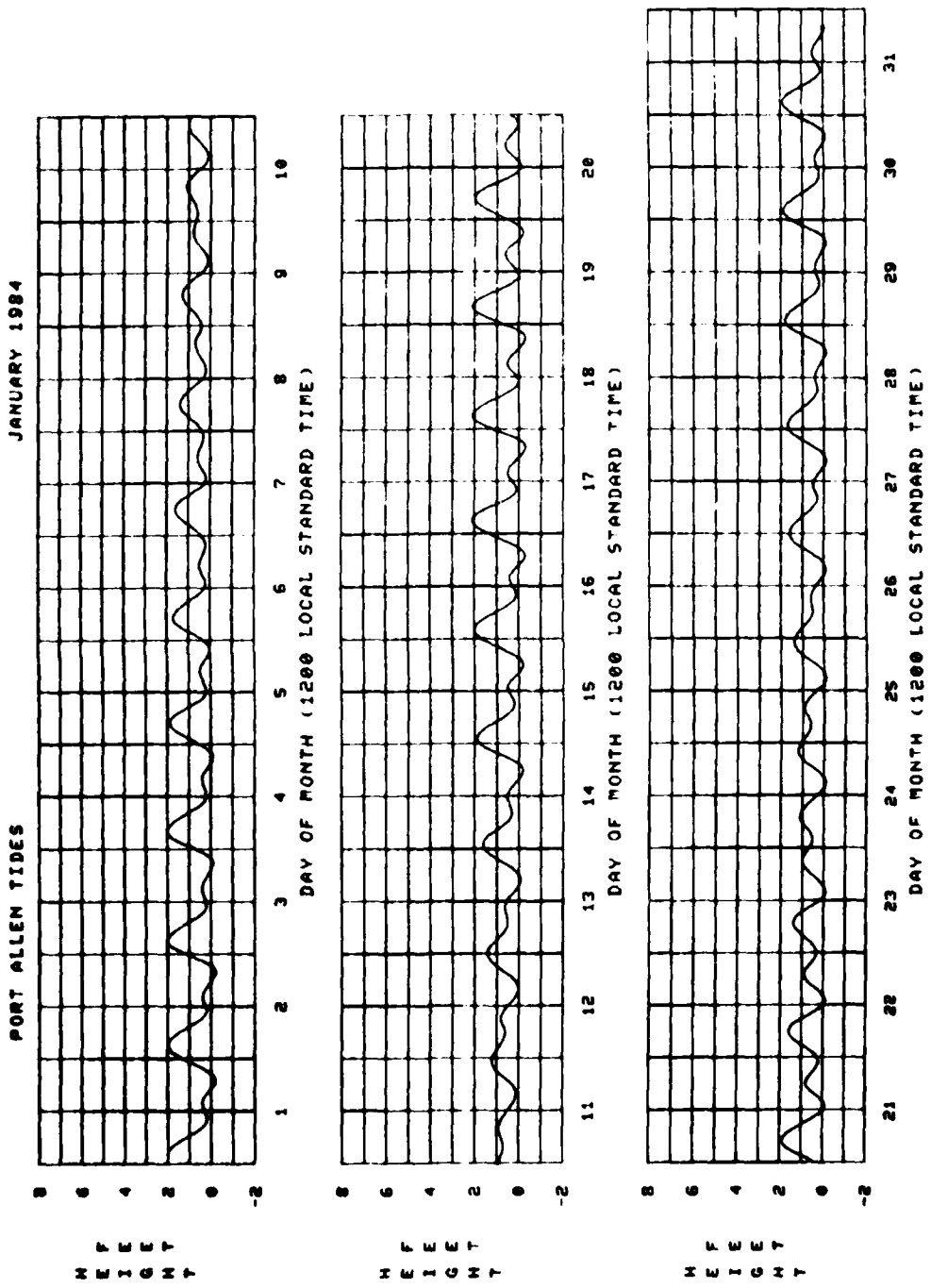

PORT ALLEN TIDES
JANUARY 1984
HEIGHT
8 6 4 2 0 -2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31

TABLE 30

PORT ALLEN TIDES
FEBRUARY 1984
21 DEG 54 MIN N, 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0341	1.9	1107	.1	1532	.5	2103	-.1
2	0407	1.8	1132	.1	1607	.6	2139	0.0
3	0438	1.7	1156	.1	1646	.7	2214	.1
4	0503	1.6	1219	.1	1725	.7	2252	.2
5	0531	1.4	1243	.1	1811	.8	2335	.3
6	0557	1.3	1309	.1	1904	.9	----	---
7	0030	.4	0626	1.1	1335	.1	2009	.9
8	0149	.6	0657	.9	1407	.1	2125	1.1
9	0355	.6	0736	.8	1449	.1	2235	1.3
10	0629	.5	0838	.6	1543	0.0	----	---
11	2337	1.4*	0745	.3	1034	.4	1642	0.0
12	0032	1.7	0829	.3	1201	.4	1743	-.1
13	0118	1.9	0902	.1	1305	.4	1839	-.2
14	0201	2.0	0936	0.0	1359	.5	1934	-.3
15	0243	2.0	1008	0.0	1448	.6	2026	-.3
16	0326	2.0	1038	-.1	1534	.8	2115	-.3
17	0404	2.0	1113	-.1	1623	.9	2207	-.2
18	0442	1.8	1142	-.1	1713	.9	2300	0.0
19	0519	1.5	1215	-.1	1808	1.1	----	---
20	0001	.2	0556	1.3	1249	-.1	1907	1.2
21	0112	.3	0632	1.0	1323	-.1	2016	1.3
22	0249	.5	0710	.8	1402	0.0	2136	1.4
23	0513	.5	0759	.6	1449	0.0	2253	1.4
24	0720	.3	0942	.4	1551	.1	----	---
25	2354	1.5*	0812	.3	1136	.4	1701	.1
26	0047	1.6	0850	.2	1246	.4	1807	0.0
27	0132	1.7	0916	.2	1335	.5	1855	0.0
28	0209	1.7	0937	.1	1414	.6	1944	0.0
29	0243	1.7	0956	.1	1446	.7	2023	0.0

* -- TIDE OCCURS ON PREVIOUS DATE.

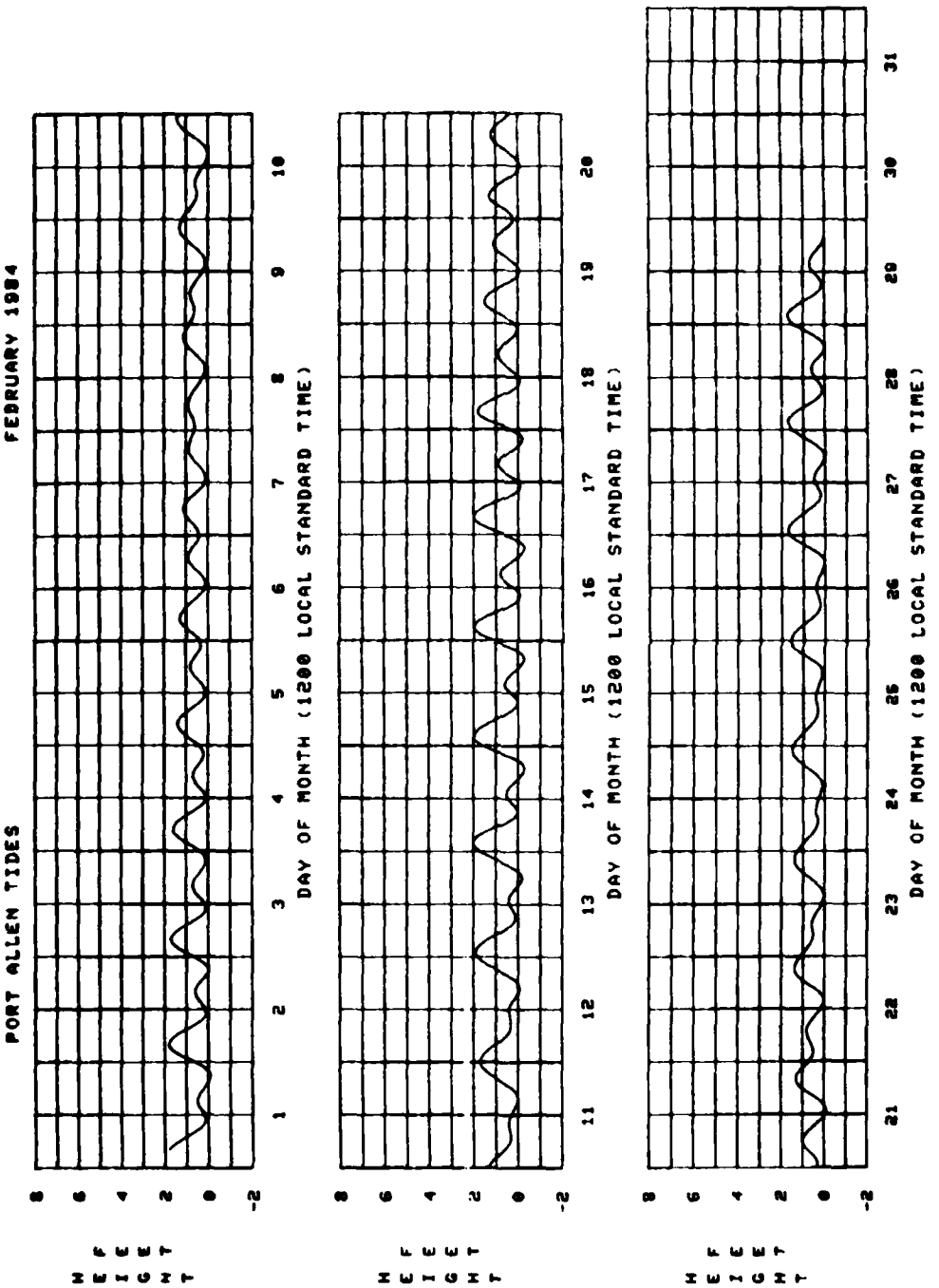

PORT ALLEN TIDES
FEBRUARY 1984
HEIGHT
8
6
4
2
0
-2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31

TABLE 31

PORT ALLEN TIDES
MARCH 1984
21 DEG 54 MIN N, 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0312	1.7	1017	.1	1518	.8	2101	0.0
2	0337	1.6	1036	.1	1550	.9	2137	0.0
3	0405	1.5	1057	.1	1622	.9	2215	.1
4	0430	1.4	1116	.1	1657	1.0	2257	.2
5	0452	1.3	1134	.1	1736	1.1	----	---
6	2343	.3*	0517	1.1	1156	1	1821	1.2
7	0040	.4	0542	.9	1219	.1	1914	1.2
8	0200	.5	0614	.7	1251	.1	2023	1.3
9	0403	.4	0651	.5	1336	.1	2139	1.4
10	0627	.3	0829	.4	1443	.1	2254	1.5
11	0725	.3	1049	.3	1608	.1	----	---
12	2356	1.6*	0751	.2	1211	.4	1725	0.0
13	0049	1.8	0823	0.0	1306	.6	1834	-.1
14	0135	1.9	0854	-.1	1355	.8	1932	-.1
15	0217	1.9	0923	-.1	1441	.9	2028	-.2
16	0258	1.8	0952	-.2	1523	1.1	2120	-.1
17	0335	1.6	1020	-.2	1608	1.2	2215	0.0
18	0414	1.4	1048	-.2	1654	1.4	2311	.1
19	0449	1.2	1118	-.2	1742	1.4	----	---
20	0012	.2	0524	.9	1145	-.1	1835	1.4
21	0132	.3	0559	.8	1217	-.1	1934	1.4
22	0308	.4	0641	.5	1254	0.0	2043	1.4
23	0521	.3	0752	.4	1346	.1	2202	1.4
24	0647	.3	1011	.3	1459	.2	2311	1.4
25	0726	.2	1153	.4	1632	.2	----	---
26	0008	1.5	0758	.2	1245	.5	1744	.2
27	0054	1.5	0820	.1	1324	.7	1847	.2
28	0132	1.5	0838	.1	1359	.8	1935	.1
29	0204	1.4	0900	0.0	1431	.9	2017	.1
30	0233	1.4	0918	0.0	1459	1.0	2059	.1
31	0301	1.3	0936	0.0	1528	1.1	2139	.1

* -- TIDE OCCURS ON PREVIOUS DATE.

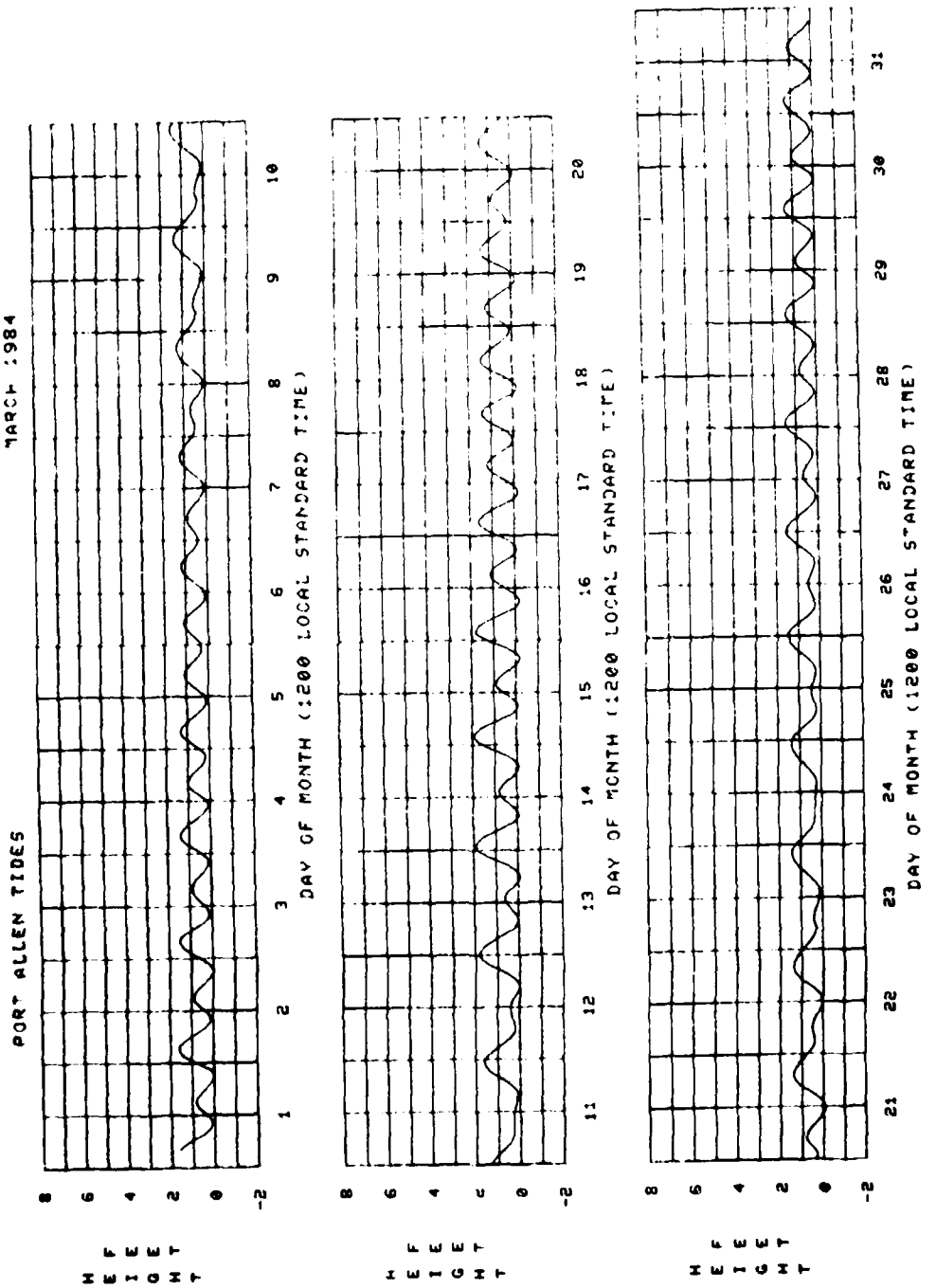

PORT ALLEN TIDES
MARCH 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 32

PORT ALLEN TIDES
APRIL 1984
21 DEG 54 MIN N 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0327	1.2	0954	0.0	1600	1.3	2221	.2
2	0351	1.1	1012	0.0	1634	1.4	2305	.2
3	0416	.9	1034	0.0	1709	1.4	----	---
4	2357	.3*	0448	.8	1055	0.0	1752	1.4
5	0103	.3	0517	.6	1119	0.0	1845	1.4
6	0229	.3	0552	.5	1156	0.0	1944	1.5
7	0418	.3	0655	.3	1243	.1	2059	1.5
8	0544	.3	0918	.3	1359	.2	2210	1.5
9	0626	.1	1106	.4	1542	.2	2315	1.6
10	0702	0.0	1213	.6	1715	.2	----	---
11	0009	1.6	0734	-.1	1303	.8	1831	1
12	0100	1.6	0802	-.2	1347	1.0	1935	.1
13	0145	1.5	0833	-.2	1429	1.2	2033	0.0
14	0227	1.4	0859	-.3	1510	1.4	2131	0.0
15	0306	1.2	0927	-.3	1553	1.6	2229	1
16	0342	1.0	0955	-.3	1635	1.7	2327	.1
17	0420	.8	1021	-.2	1717	1.7	----	---
18	0031	.2	0459	.6	1050	-.1	1806	1.7
19	0147	.3	0537	.4	1121	-.1	1859	1.6
20	0313	.3	0636	.3	1156	.1	1959	1.5
21	0452	.3	0812	.3	1241	.2	2105	1.4
22	0547	.2	1023	.3	1406	.3	2210	1.4
23	0626	.1	1141	.5	1553	.3	2311	1.4
24	0655	.1	1229	.7	1722	.3	----	---
25	2357	1.4*	0719	.1	1305	.9	1829	.3
26	0029	1.3	0738	0.0	1337	1.0	1924	.3
27	0115	1.2	0759	0.0	1408	1.1	2015	.3
28	0147	1.1	0818	-.1	1437	1.3	2102	.2
29	0219	1.0	0838	-.1	1509	1.4	2146	.2
30	0248	.9	0858	-.1	1541	1.5	2234	.2

* -- TIDE OCCURS ON PREVIOUS DATE.

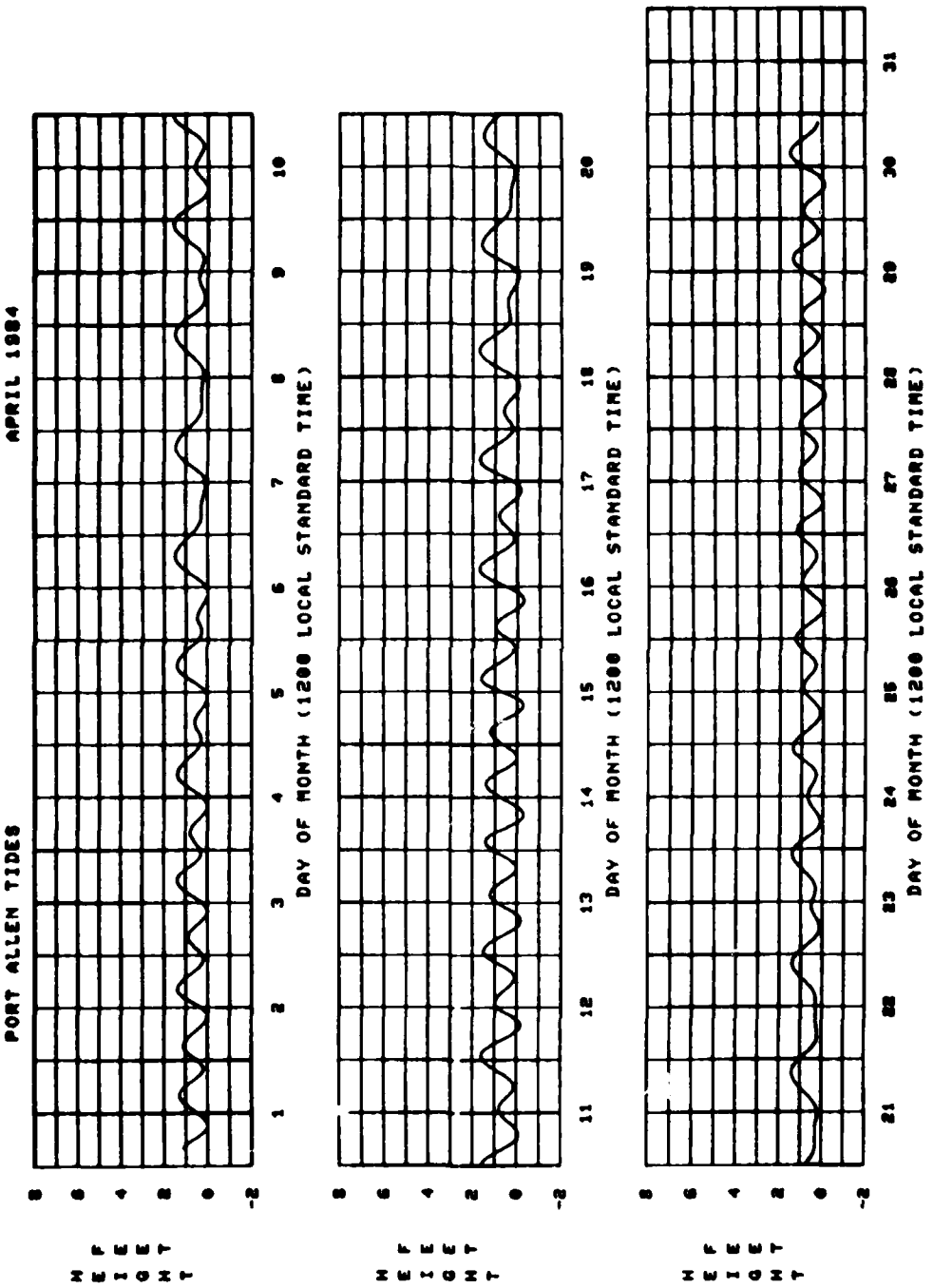

PORT ALLEN TIDES
APRIL 1984
HEIGHT IN FEET
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 33

PORT ALLEN TIDES
MAY 1984
21 DEG 54 MIN N. 159 DEG 35 MIN W - HAWAIIAN STD

DATE	TIME HAST	HGT FT	TIME HAST	HGT FT	TIME HAST	HGT FT	TIME HAST	HGT FT
1	0320	.8	0919	-.1	1613	1.6	2323	.2
2	0347	.6	0942	-.1	1651	1.7	----	---
3	0019	.2	0426	.5	1010	-.1	1734	1.7
4	0124	.2	0505	.4	1042	-.1	1822	1.7
5	0240	.2	0604	.3	1119	0.0	1921	1.7
6	0353	.2	0743	.3	1211	.1	2021	1.6
7	0448	.1	0942	.3	1341	.3	2128	1.5
8	0534	0.0	1108	.5	1530	.3	2229	1.5
9	0608	-.1	1204	.8	1713	.3	----	---
10	2325	1.4*	0642	-.2	1252	1.0	1834	.3
11	0017	1.3	0712	-.3	1335	1.3	1945	.3
12	0106	1.1	0742	-.3	1417	1.5	2049	.2
13	0151	.9	0811	-.3	1455	1.7	2149	.2
14	0230	.8	0839	-.3	1538	1.9	2247	.1
15	0312	.7	0908	-.3	1616	1.9	----	---
16	2343	.1*	0354	.5	0936	-.2	1658	1.9
17	0046	.1	0436	.4	1008	-.2	1742	1.9
18	0148	.2	0529	.3	1044	0.0	1829	1.7
19	0250	.2	0631	.3	1119	.1	1919	1.6
20	0353	.2	0805	.3	1205	.2	2012	1.5
21	0437	.1	0954	.4	1320	.3	2105	1.4
22	0512	.1	1111	.6	1507	.4	2159	1.3
23	0544	0.0	1154	.8	1646	.5	2248	1.2
24	0610	0.0	1236	.9	1810	.5	----	---
25	2333	1.1*	0635	0.0	1311	1.2	1916	.4
26	0016	.9	0658	-.1	1340	1.4	2014	.3
27	0057	.9	0720	-.1	1412	1.5	2107	.3
28	0136	.8	0745	-.2	1447	1.7	2157	.3
29	0211	.6	0810	-.2	1522	1.8	2249	.2
30	0250	.5	0839	-.2	1557	1.9	2335	.2
31	0332	.4	0907	-.2	1636	2.0	----	---

* -- TIDE OCCURS ON PREVIOUS DATE.

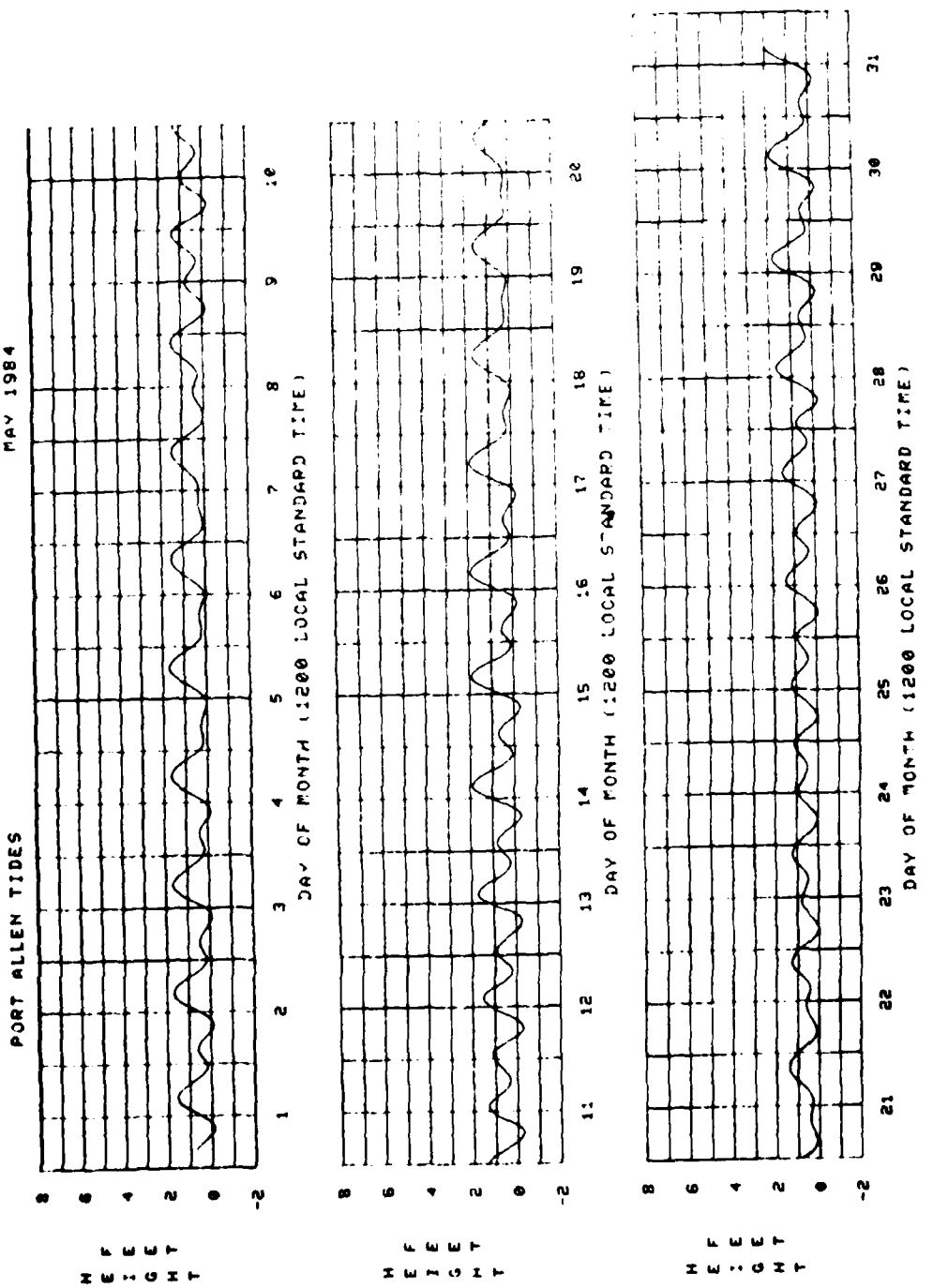

PORT ALLEN TIDES
MAY 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 34

PORT ALLEN TIDES
JUNE 1984
21 DEG 54 MIN N. 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0030	.1	0417	.3	0943	-.2	1721	2.0
2	0126	.1	0513	.3	1025	-.1	1808	1.9
3	0215	.1	0623	.3	1111	0.0	1857	1.8
4	0307	0.0	0754	.4	1216	.2	1949	1.7
5	0356	0.0	0927	.5	1339	.3	2043	1.5
6	0437	-.1	1046	.8	1528	.5	2144	1.4
7	0512	-.2	1145	1.0	1715	.5	2239	1.2
8	0549	-.2	1234	1.3	1847	.4	----	---
9	2336	1.0*	0623	-.3	1321	1.5	2006	.3
10	0030	.8	0655	-.3	1403	1.8	2111	.3
11	0119	*.7	0729	-.3	1443	1.9	2210	.2
12	0211	.5	0800	-.3	1522	2.0	2303	.2
13	0254	.4	0832	-.3	1601	2.0	----	---
14	2352	.1*	0339	.4	0907	-.2	1641	2.0
15	0037	.1	0424	.3	0941	-.1	1720	1.9
16	0126	.1	0518	.3	1018	0.0	1800	1.8
17	0205	.2	0616	.4	1100	.1	1837	1.7
18	0247	.1	0727	.4	1146	.3	1920	1.5
19	0322	.1	0850	.5	1251	.4	2001	1.4
20	0357	.1	1009	.7	1417	.6	2043	1.3
21	0429	.1	1111	.9	1605	.6	2135	1.1
22	0459	0.0	1157	1.1	1749	.6	2224	.9
23	0527	0.0	1239	1.3	1915	.5	2316	.8
24	0559	-.1	1313	1.5	2021	.4	----	---
25	0011	.7	0628	-.1	1349	1.7	2115	.3
26	0100	.6	0703	-.2	1427	1.9	2202	.3
27	0149	.5	0735	-.2	1503	2.0	2247	.2
28	0235	.4	0814	-.2	1544	2.0	2329	.1
29	0324	.4	0855	-.2	1624	2.1	----	---
30	0011	.1	0416	.4	0938	-.2	1705	2.0

* -- TIDE OCCURS ON PREVIOUS DATE.

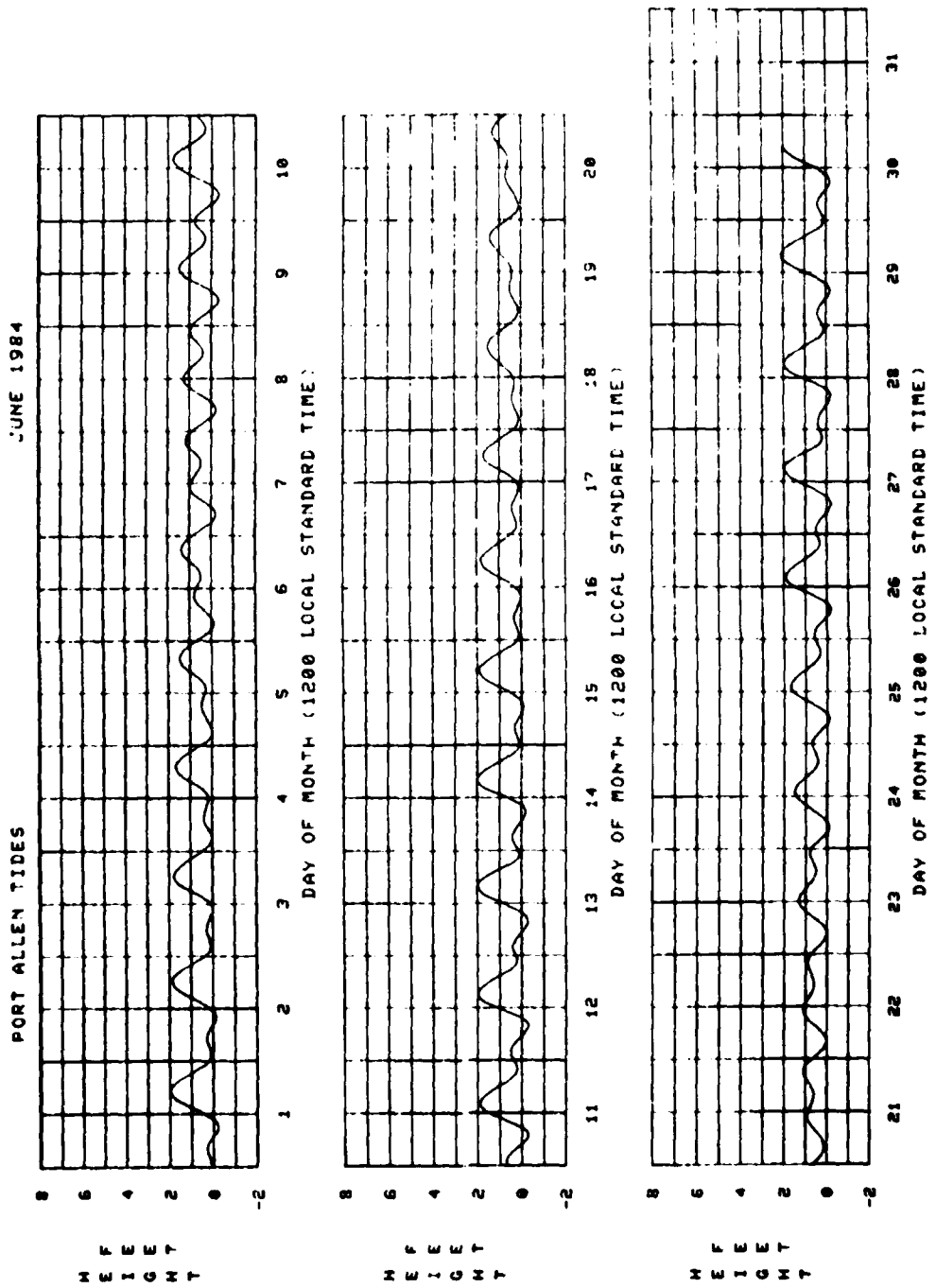

PORT ALLEN TIDES
JUNE 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 35

PORT ALLEN TIDES
JULY 1984
21 DEG 54 MIN N, 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0050	.1	0513	.5	1026	-.1	1747	2.0
2	0134	0.0	0619	.5	1119	.1	1831	1.9
3	0217	0.0	0735	.7	1224	.3	1917	1.6
4	0256	0.0	0858	.9	1347	.5	2005	1.4
5	0338	-.1	1017	1.0	1535	.6	2055	1.2
6	0416	-.1	1119	1.3	1736	.6	2153	.9
7	0457	-.1	1215	1.5	1915	.5	2302	.8
8	0539	-.2	1304	1.8	2037	.4	----	---
9	0008	.6	0615	-.2	1349	1.9	2130	.3
10	0107	.5	0658	-.2	1431	2.0	2215	.3
11	0201	.5	0738	-.2	1510	2.0	2254	.2
12	0248	.4	0817	-.1	1545	2.0	2333	.2
13	0331	.5	0855	-.1	1622	2.0	----	---
14	0006	.2	0411	.5	0934	0.0	1654	1.9
15	0036	.2	0457	.5	1010	.1	1726	1.8
16	0105	.2	0542	.6	1051	.2	1758	1.7
17	0136	.2	0643	.7	1134	.3	1829	1.5
18	0206	.2	0743	.8	1232	.5	1905	1.4
19	0237	.2	0853	.9	1349	.7	1936	1.2
20	0309	.2	1005	1.0	1537	.8	2018	1.0
21	0342	.1	1107	1.3	1744	.7	2117	.9
22	0421	.1	1159	1.4	1923	.6	2223	.7
23	0504	.1	1242	1.6	2026	.4	----	---
24	2342	.6*	0549	0.0	1324	1.9	2108	.3
25	0046	.5	0634	-.1	1406	2.0	2150	.3
26	0140	.5	0719	-.1	1447	2.1	2222	.2
27	0230	.6	0808	-.2	1524	2.1	2257	.2
28	0320	.6	0850	-.2	1606	2.1	2332	.1
29	0409	.7	0942	-.1	1644	2.0	----	---
30	0008	.1	0505	.8	1031	.1	1724	2.0
31	0041	.1	0603	.9	1130	.3	1802	1.7

* -- TIDE OCCURS ON PREVIOUS DATE.

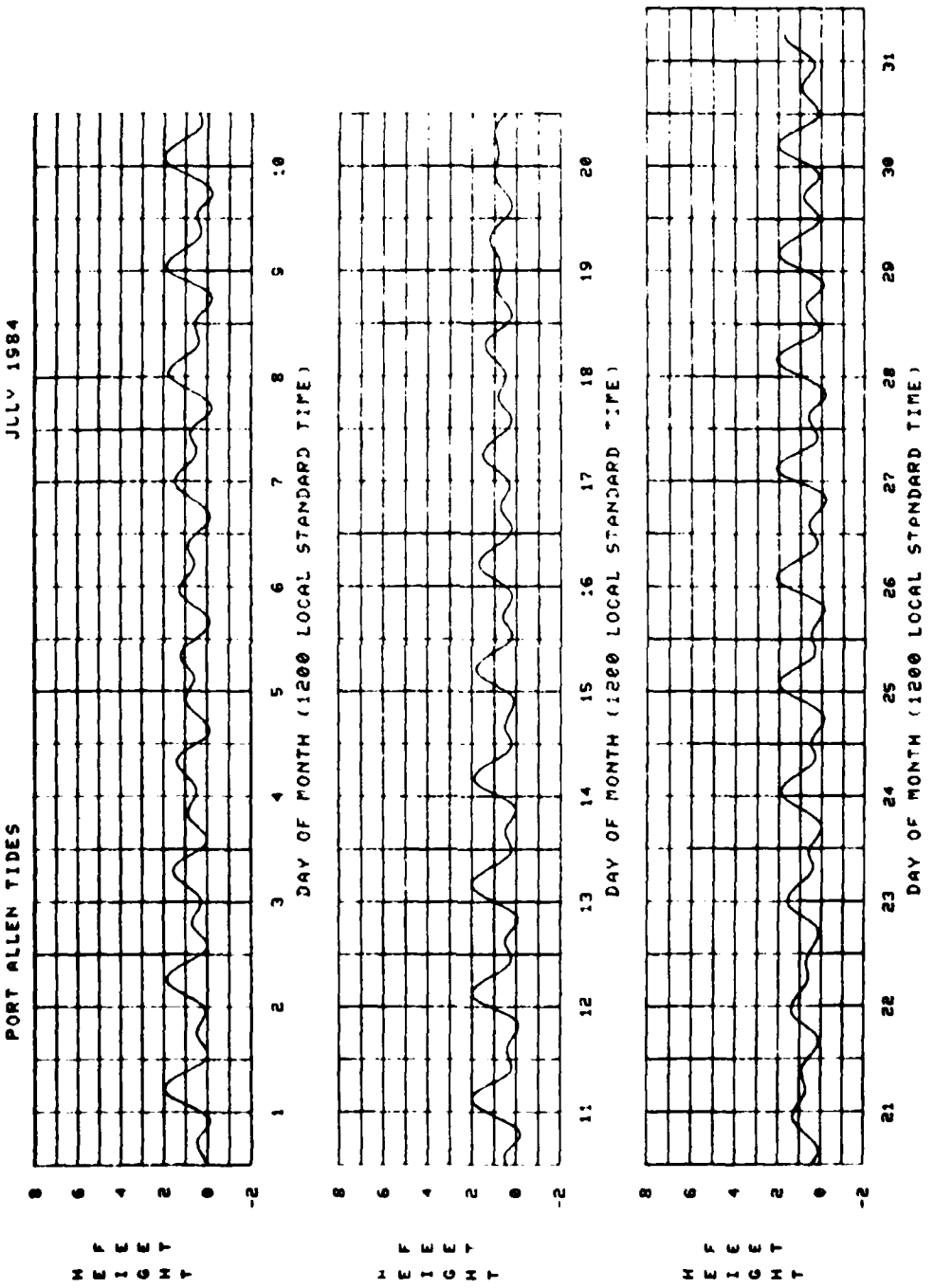

PORT ALLEN TIDES
JULY 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 36

PORT ALLEN TIDES
AUGUST 1984
21 DEG 54 MIN N, 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0118	0.0	0706	1.0	1236	.4	1841	1.4
2	0154	0.0	0819	1.2	1402	.6	1927	1.2
3	0235	0.0	0937	1.4	1556	.7	2015	.9
4	0319	0.0	1051	1.5	1811	.6	2121	.8
5	0408	.1	1153	1.7	1944	.5	2247	.6
6	0501	.1	1245	1.9	2043	.3	----	---
7	0013	.5	0555	0.0	1333	2.0	2121	.3
8	0115	.6	0644	0.0	1414	2.0	2153	.3
9	0203	.6	0729	0.0	1449	2.0	2222	.3
10	0242	.7	0811	0.0	1524	2.0	2250	.3
11	0320	.7	0850	.1	1556	1.9	2311	.3
12	0356	.8	0929	.1	1621	1.8	2337	.3
13	0433	.9	1005	.2	1650	1.7	----	---
14	2359	.3*	0512	.9	1046	.3	1715	1.5
15	0020	.3	0555	1.0	1132	.4	1744	1.4
16	0046	.3	0647	1.1	1225	.6	1812	1.3
17	0113	.3	0746	1.2	1339	.7	1840	1.0
18	0144	.3	0855	1.3	1531	.8	1912	.9
19	0223	.3	1008	1.4	1759	.6	2021	.7
20	0315	.3	1114	1.5	1932	.5	2211	.6
21	0417	.2	1207	1.7	2007	.4	----	---
22	2341	.6*	0519	.2	1255	1.9	2039	.3
23	0046	.6	0618	.1	1339	2.0	2111	.3
24	0137	.7	0714	0.0	1421	2.1	2141	.2
25	0224	.9	0804	0.0	1459	2.1	2211	.1
26	0312	.9	0855	0.0	1541	2.0	2241	.1
27	0357	1.1	0947	.1	1617	1.9	2311	.1
28	0446	1.2	1039	.2	1652	1.7	----	---
29	2343	.1*	0542	1.4	1139	.3	1733	1.4
30	0016	.1	0637	1.4	1251	.5	1810	1.2
31	0051	.1	0740	1.5	1423	.6	1851	.9

* -- TIDE OCCURS ON PREVIOUS DATE.

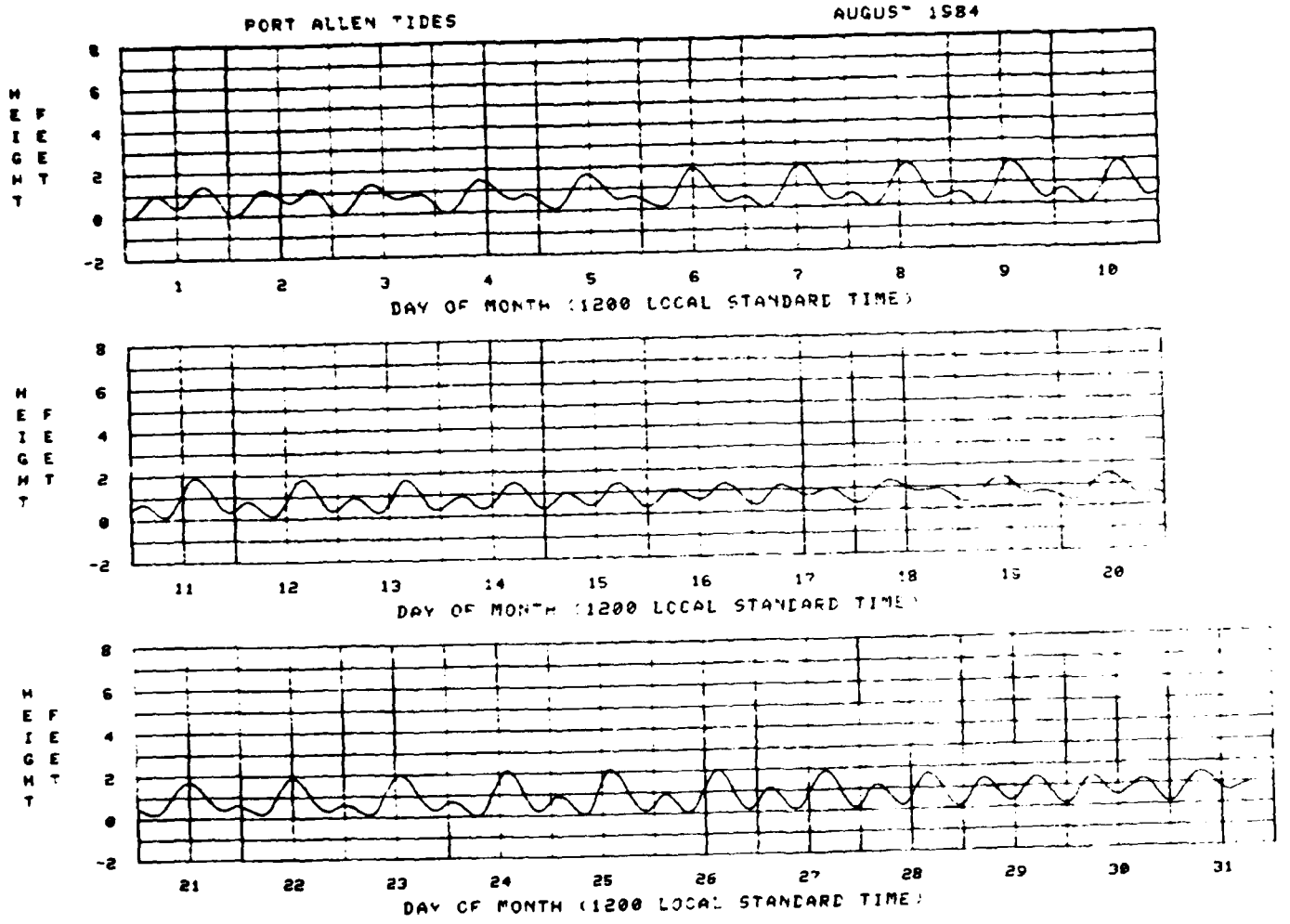

PORT ALLEN TIDES
AUGUST 1984
HEIGHT FEET
8
6
4
2
0
-2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
11 12 13 14 15 16 17 18 19 20
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
21 22 23 24 25 26 27 28 29 30 31
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 37

PORT ALLEN TIDES
SEPTEMBER 1984
21 DEG 54 MIN N. 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0128	.2	0855	1.6	1629	.6	1946	.8
2	0214	.2	1011	1.7	1833	.5	2126	.6
3	0321	.3	1122	1.8	1935	.4	2316	.6
4	0434	.3	1218	1.8	2017	.3	----	---
5	0030	.6	0541	.3	1306	1.9	2046	.3
6	0118	.7	0639	.3	1345	1.9	2111	.3
7	0158	.9	0728	.2	1421	1.9	2132	.3
8	0230	.9	0810	.2	1453	1.8	2154	.3
9	0305	1.0	0848	.2	1520	1.7	2213	.3
10	0337	1.1	0927	.3	1545	1.6	2231	.3
11	0409	1.2	1006	.3	1612	1.5	2252	.3
12	0441	1.3	1047	.4	1636	1.4	2311	.3
13	0519	1.4	1132	.5	1701	1.2	2332	.3
14	0601	1.4	1230	.6	1729	1.0	----	---
15	2355	.3*	0654	1.4	1350	.7	1758	.9
16	0024	.3	0756	1.4	1547	.6	1833	.7
17	0103	.3	0909	1.5	1800	.5	2016	.6
18	0206	.3	1024	1.6	1855	.4	2233	.6
19	0335	.3	1127	1.8	1927	.3	----	---
20	2353	.7*	0501	.3	1220	1.9	1956	.3
21	0047	.8	0610	.3	1306	2.0	2025	.2
22	0131	.9	0709	.2	1348	2.0	2053	.1
23	0217	1.1	0805	.1	1431	1.9	2121	.1
24	0300	1.4	0900	.1	1508	1.8	2147	0.0
25	0342	1.5	0955	.2	1547	1.5	2216	0.0
26	0427	1.6	1052	.3	1622	1.4	2246	0.0
27	0516	1.7	1156	.3	1701	1.1	2317	.1
28	0607	1.8	1310	.4	1737	.9	----	---
29	2350	.1*	0704	1.8	1448	.5	1828	.7
30	0024	.2	0813	1.8	1647	.5	1946	.6

* -- TIDE OCCURS ON PREVIOUS DATE.

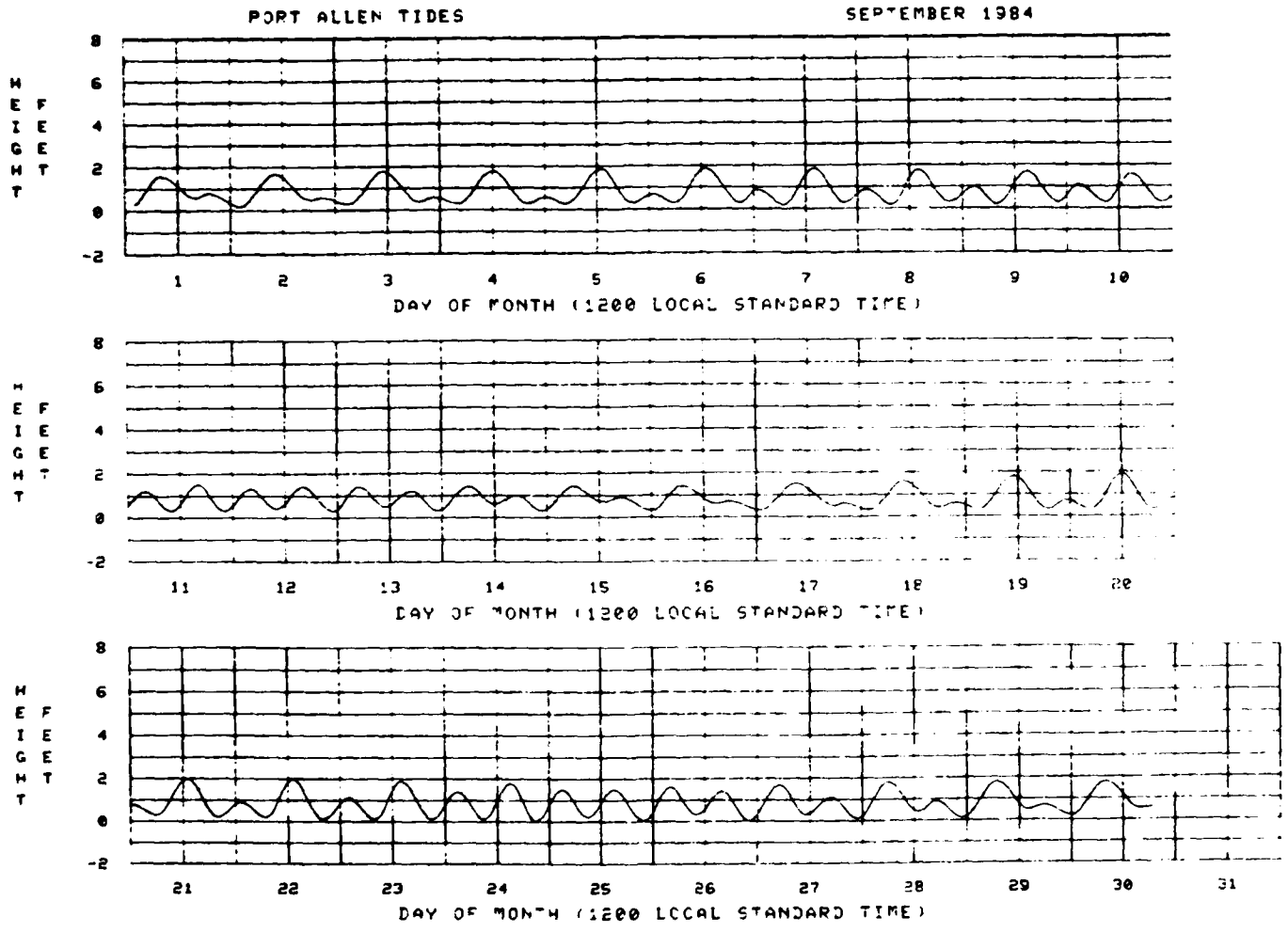

PORT ALLEN TIDES
SEPTEMBER 1984
HEIGHT FEET
8
6
4
2
0
-2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
11 12 13 14 15 16 17 18 19 20
DAY OF MONTH (1200 LOCAL STANDARD TIME)
HEIGHT FEET
8
6
4
2
0
-2
21 22 23 24 25 26 27 28 29 30 31
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 38

PORT ALLEN TIDES
OCTOBER 1984
21 DEG 54 MIN N. 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	0113	.3	0928	1.7	1813	.4	2205	.5
2	0232	.4	1039	1.7	1859	.3	----	---
3	2340	.6*	0408	.4	1139	1.7	1931	.3
4	0032	.8	0528	.4	1228	1.7	1956	.3
5	0111	.9	0631	.3	1309	1.7	2018	.3
6	0145	1.0	0722	.3	1344	1.6	2036	.2
7	0218	1.2	0809	.3	1413	1.5	2055	.2
8	0246	1.3	0850	.3	1441	1.4	2113	.2
9	0315	1.4	0930	.3	1506	1.4	2130	.2
10	0347	1.5	1011	.4	1531	1.2	2148	.2
11	0419	1.6	1058	.4	1600	1.0	2209	.2
12	0454	1.6	1147	.5	1625	.9	2229	.2
13	0533	1.7	1249	.5	1654	.8	2250	.2
14	0618	1.7	1409	.5	1729	.7	2321	.3
15	0714	1.7	1555	.4	1835	.5	----	---
16	0007	.3	0826	1.7	1720	.4	2054	.5
17	0112	.3	0936	1.7	1802	.3	2250	.6
18	0302	.4	1042	1.7	1835	.3	----	---
19	2353	.8*	0445	.4	1138	1.8	1906	.2
20	0042	.9	0605	.3	1228	1.7	1932	.1
21	0124	1.2	0711	.3	1315	1.6	2001	0.0
22	0206	1.4	0813	.3	1357	1.5	2030	-.1
23	0246	1.7	0911	.3	1436	1.4	2057	-.1
24	0329	1.9	1009	.3	1515	1.1	2125	-.1
25	0411	2.0	1108	.3	1557	.9	2154	-.1
26	0454	2.0	1214	.3	1635	.8	2226	0.0
27	0543	2.0	1327	.3	1717	.6	2257	.1
28	0635	2.0	1453	.3	1816	.5	2329	.2
29	0734	1.8	1625	.3	1959	.4	----	---
30	0017	.3	0837	1.7	1721	.3	2215	.5
31	0136	.4	0944	1.6	1800	.3	----	---

* -- TIDE OCCURS ON PREVIOUS DATE.

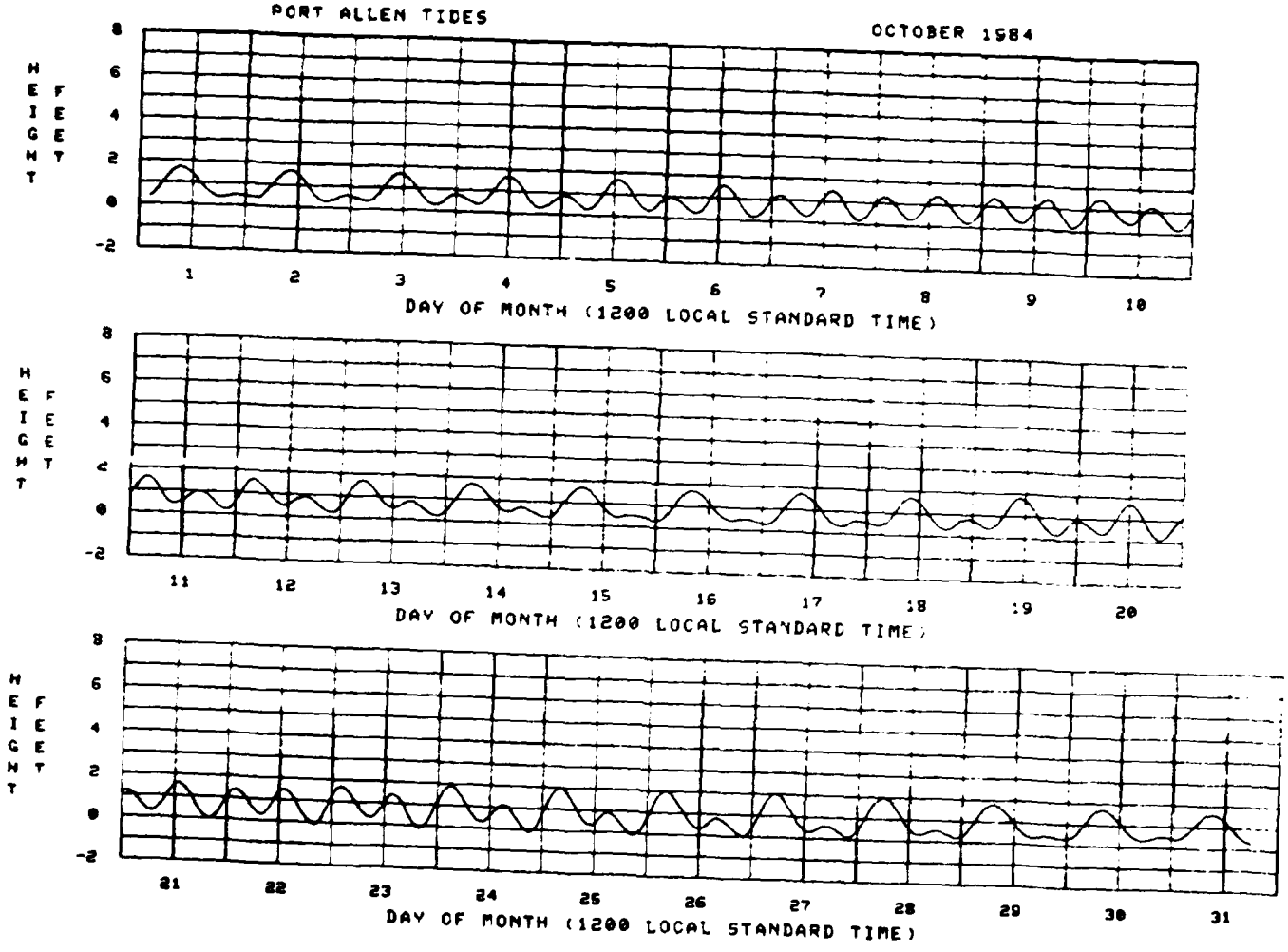

PORT ALLEN TIDES
OCTOBER 1984
HEIGHT FEET
8
6
4
2
0
-2
1 2 3 4 5 6 7 8 9 10
DAY OF MONTH (1200 LOCAL STANDARD TIME)
11 12 13 14 15 16 17 18 19 20
DAY OF MONTH (1200 LOCAL STANDARD TIME)
21 22 23 24 25 26 27 28 29 30 31
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 39

PORT ALLEN TIDES
NOVEMBER 1984
21 DEG 54 MIN N. 159 DEG 35 MIN W - HANAPEPE BAY

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	2338	.7*	0329	.5	1045	1.5	1832	.2
2	0020	.9	0505	.5	1134	1.5	1856	.2
3	0057	1.0	0615	.5	1216	1.4	1919	.2
4	0126	1.2	0717	.5	1255	1.4	1937	.1
5	0155	1.4	0805	.4	1327	1.2	1959	.1
6	0227	1.5	0853	.4	1359	1.1	2017	.1
7	0255	1.6	0939	.3	1427	1.0	2038	0.0
8	0327	1.7	1024	.3	1459	.9	2056	0.0
9	0400	1.8	1111	.3	1528	.8	2120	0.0
10	0432	.9	1204	.3	1600	.7	2146	.1
11	0514	1.9	1305	.3	1642	.5	2211	.1
12	0556	1.9	1414	.3	1730	.5	2249	.2
13	0648	1.8	1526	.3	1859	.4	2335	.3
14	0747	1.8	1622	.3	2108	.5	----	---
15	0050	.3	0850	1.7	1704	.2	2242	.7
16	0243	.5	0954	1.6	1739	.1	----	---
17	2341	.9*	0437	.5	1050	1.5	1813	0.0
18	0028	1.2	0607	.5	1147	1.4	1844	-.1
19	0111	1.4	0722	.4	1236	1.2	1914	-.2
20	0154	1.7	0827	.3	1321	1.1	1943	-.2
21	0236	1.9	0928	.3	1408	.9	2014	-.2
22	0314	2.0	1028	.3	1452	.8	2044	-.2
23	0356	2.1	1127	.2	1534	.6	2117	-.2
24	0438	2.1	1226	.2	1620	.5	2149	-.1
25	0523	2.0	1325	.2	1709	.4	2220	0.0
26	0608	2.0	1427	.3	1811	.4	2259	.2
27	0656	1.8	1529	.2	1943	.4	----	---
28	2345	.3*	0748	1.7	1615	.2	2129	.5
29	0051	.4	0841	1.5	1653	.2	2255	.7
30	0237	.6	0934	1.4	1725	.1	----	---

* -- TIDE OCCURS ON PREVIOUS DATE.

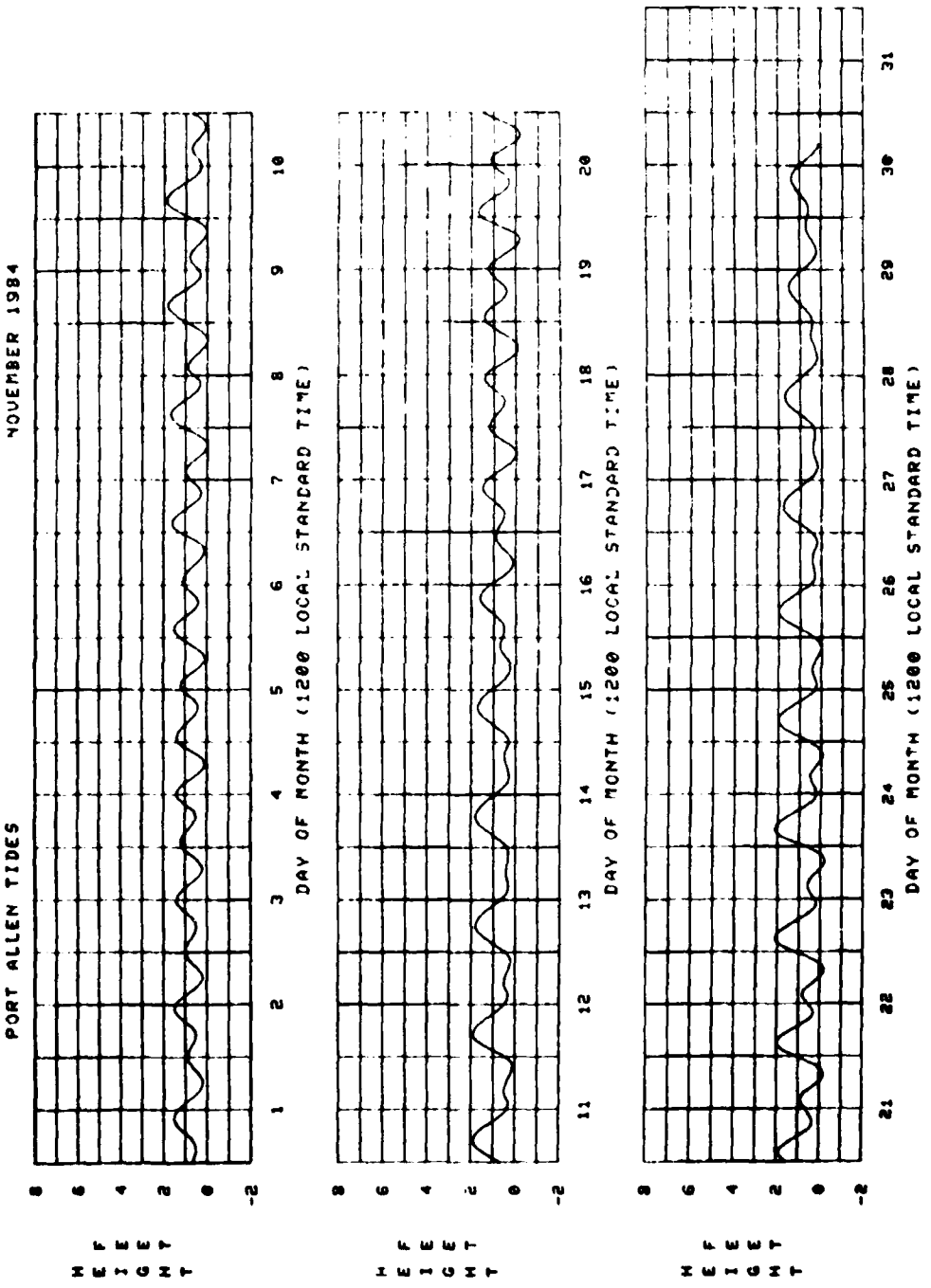
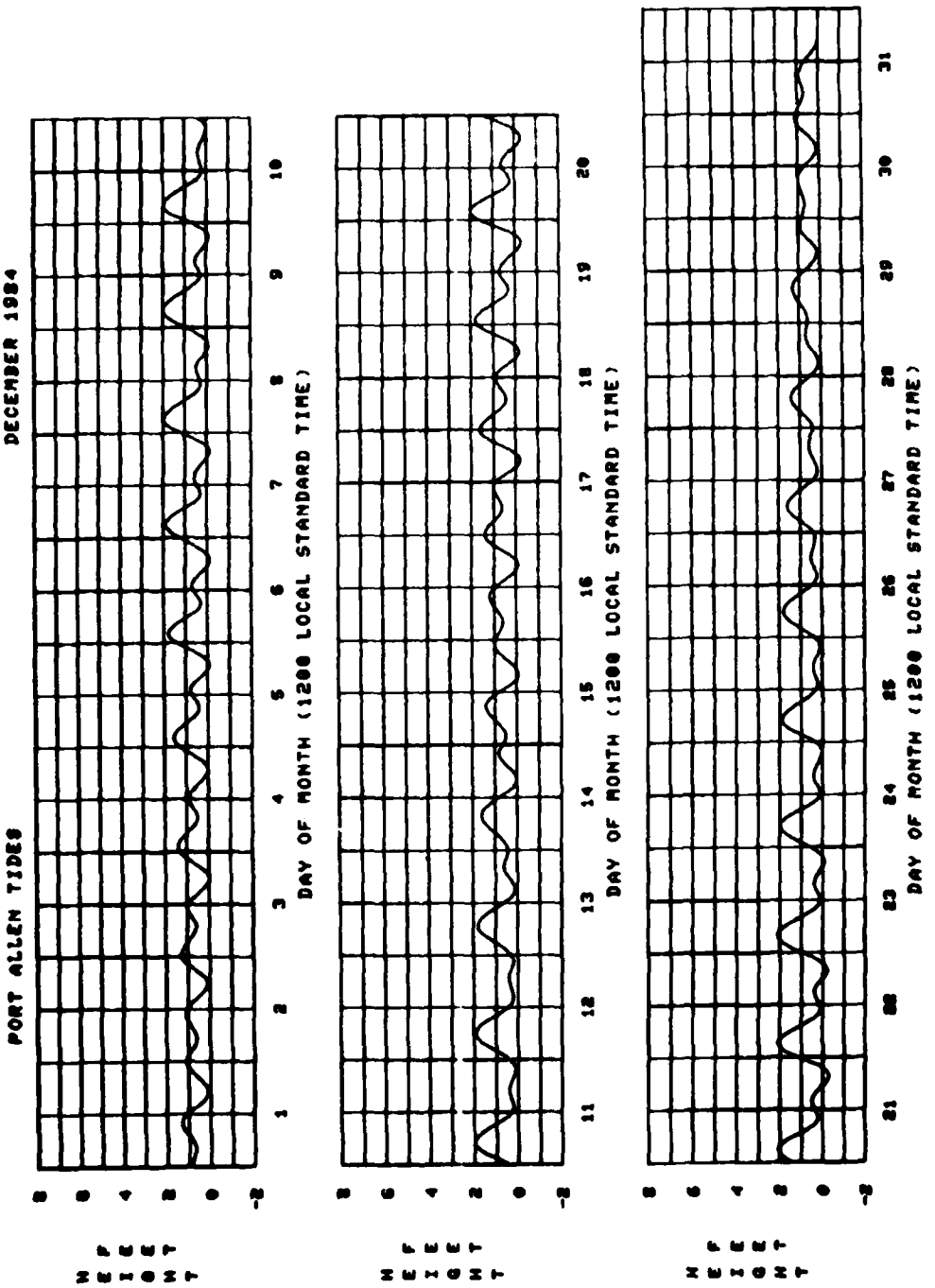

PORT ALLEN TIDES
NOVEMBER 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

TABLE 40

PORT ALLEN TIDES
DECEMBER 1984
21 DEG 54 MIN N 159 DEG 35 MIN W - HAWAIIAN STD

DATE	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT	TIME AHST	HGT FT
1	2347	.9*	0427	.7	1025	1.3	1752	.1
2	0030	1.1	0559	.6	1113	1.1	1815	.1
3	0058	1.3	0711	.6	1159	1.0	1840	0.0
4	0133	1.4	0810	.5	1241	.9	1906	0.0
5	0205	1.6	0902	.4	1321	.8	1929	-.1
6	0237	1.8	0951	.3	1358	.7	1955	-.1
7	0309	1.9	1033	.3	1437	.6	2022	-.1
8	0344	2.0	1122	.3	1512	.5	2051	-.1
9	0420	2.0	1209	.3	1554	.5	2126	-.1
10	0459	2.0	1256	.2	1644	.4	2202	0.0
11	0542	2.0	1347	.2	1742	.4	2244	.1
12	0627	1.9	1433	.2	1904	.4	----	---
13	2339	.2*	0713	1.8	1519	.1	2040	.6
14	0055	.4	0805	1.6	1601	0.0	2212	.8
15	0238	.5	0903	1.4	1640	-.1	2315	1.0
16	0435	.6	1002	1.2	1717	-.1	----	---
17	0011	1.4	0621	.6	1102	1.0	1754	-.2
18	0056	1.6	0745	.4	1201	.9	1829	-.2
19	0142	1.8	0852	.3	1256	.7	1905	-.3
20	0224	2.0	0951	.2	1351	.6	1941	-.3
21	0304	2.1	1040	.2	1438	.5	2019	-.3
22	0344	2.1	1130	.1	1522	.4	2054	-.2
23	0423	2.1	1214	.1	1611	.4	2127	-.1
24	0502	2.0	1256	.1	1657	.4	2208	0.0
25	0542	1.9	1341	.2	1754	.4	2247	.1
26	0618	1.8	1417	.2	1857	.5	2329	.3
27	0657	1.6	1456	.2	2020	.6	----	---
28	0028	.4	0736	1.4	1531	.1	2142	.7
29	0147	.6	0819	1.3	1605	.1	2255	.9
30	0344	.7	0905	1.0	1637	.1	----	---
31	2347	1.1*	0546	.7	0957	.9	1710	0.0

* -- TIDE OCCURS ON PREVIOUS DATE.


PORT ALLEN TIDES
DECEMBER 1984
HEIGHT
DAY OF MONTH (1200 LOCAL STANDARD TIME)

APPENDIX A

HEIGHT OF THE TIDE AT ANY TIME*

The height of the tide at times intermediate to the times of high and low water is needed on occasion, and may be computed by either numerical or graphical methods. One example of each method is presented here, using the predicted tides for a day at Point Mugu.

Problem: Given that the predicted times and heights of the tides are:

Time	Height	Time	Height	Time	Height	Time	Height
0039	4.9	0814	0.2	1510	3.1	1933	2.4

Find the height of the tide at 0300.

Numerical Method

The duration of fall is $08^h\ 14^m - 00^h\ 39^m = 7^h\ 35^m$.

The time after high water for which the height is required is $03^h\ 00^m - 00^h\ 39^m = 02^h\ 21^m$.

The range of tide is 4.9–0.2 = 4.7 feet.

Entering table A-1 at the duration of fall of $7^h\ 40^m$, which is the nearest value to $7^h\ 35^m$, the nearest value on the horizontal line to $2^h\ 21^m$ is $2^h\ 18^m$ after high water. Following down this column to its intersection with a range of 4.5 feet which is the nearest tabular value to 4.7 feet, one obtains 0.9 which, being calculated from high water, must be subtracted from it. The approximate height at $03^h\ 00^m$ is, therefore, 4.9–0.9 = 4.0 feet.

When the duration of rise or fall is greater than $10^h\ 40^m$, enter the table with one-half the given duration and with one-half the time from the nearest high or low water; but if the duration of rise or fall is less than 4 hours, enter the table with double the given duration and with double the time from the nearest high or low water.

*This information is adapted from table 3 of the data source for this publication (see page 1).

Table A-1. Height of the Tide at Any Time

Time from the nearest high water or low water

Duration of rise or fall, see footnote. (h. m)	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m	h. m
4 00	0 08	0 16	0 24	0 32	0 40	0 48	0 56	1 04	1 12	1 20	1 28	1 36	1 44	1 52	2 00
4 20	0 09	0 17	0 26	0 35	0 43	0 52	1 01	1 09	1 18	1 27	1 35	1 44	1 53	2 01	2 10
4 40	0 09	0 19	0 28	0 37	0 47	0 56	1 05	1 15	1 24	1 33	1 43	1 52	2 01	2 11	2 20
5 00	0 10	0 20	0 30	0 40	0 50	1 00	1 10	1 20	1 30	1 40	1 50	2 00	2 10	2 20	2 30
5 20	0 11	0 21	0 32	0 43	0 53	1 04	1 15	1 25	1 36	1 47	1 57	2 08	2 19	2 29	2 40
5 40	0 11	0 23	0 34	0 45	0 57	1 08	1 19	1 31	1 42	1 53	2 05	2 16	2 27	2 39	2 50
6 00	0 12	0 24	0 36	0 48	1 00	1 12	1 24	1 36	1 48	2 00	2 12	2 24	2 36	2 48	3 00
6 20	0 13	0 25	0 38	0 51	1 03	1 16	1 29	1 41	1 54	2 07	2 19	2 32	2 45	2 57	3 10
6 40	0 13	0 27	0 40	0 53	1 07	1 20	1 33	1 47	2 00	2 13	2 27	2 40	2 53	3 07	3 20
7 00	0 14	0 28	0 42	0 56	1 10	1 24	1 38	1 52	2 06	2 20	2 34	2 48	3 02	3 16	3 30
7 20	0 15	0 29	0 44	0 59	1 13	1 28	1 43	1 57	2 12	2 27	2 41	2 56	3 11	3 25	3 40
7 40	0 15	0 31	0 46	1 01	1 17	1 32	1 47	2 03	2 18	2 33	2 49	3 04	3 19	3 35	3 50
8 00	0 16	0 32	0 48	1 04	1 20	1 36	1 52	2 08	2 24	2 40	2 56	3 12	3 28	3 44	4 00
8 20	0 17	0 33	0 50	1 07	1 23	1 40	1 57	2 13	2 30	2 47	3 03	3 20	3 37	3 53	4 10
8 40	0 17	0 35	0 52	1 09	1 27	1 44	2 01	2 19	2 36	2 53	3 11	3 28	3 45	4 03	4 20
9 00	0 18	0 36	0 54	1 12	1 30	1 48	2 06	2 24	2 42	3 00	3 18	3 36	3 54	4 12	4 30
9 20	0 19	0 37	0 56	1 15	1 33	1 52	2 11	2 29	2 48	3 07	3 25	3 44	4 03	4 21	4 40
9 40	0 19	0 39	0 58	1 17	1 37	1 56	2 15	2 35	2 54	3 13	3 33	3 52	4 11	4 31	4 50
10 00	0 20	0 40	1 00	1 20	1 40	2 00	2 20	2 40	3 00	3 20	3 40	4 00	4 20	4 40	5 00
10 20	0 21	0 41	1 02	1 23	1 43	2 04	2 25	2 45	3 06	3 27	3 47	4 08	4 29	4 49	5 10
10 40	0 21	0 43	1 04	1 25	1 47	2 08	2 29	2 51	3 12	3 33	3 55	4 16	4 37	4 59	5 20

Correction to height

Range of tide, see footnote. (Ft)	Ft	Ft	Ft.	Ft	Ft.	Ft.	Ft.	Ft.	Ft	Ft	Ft	Ft	Ft.	Ft	Ft
0.5	0 0	0 0	0 0	0 0	0 0	0 0	0.1	0.1	0.1	0 1	0 1	0 2	0 2	0 2	0 2
1.0	0 0	0 0	0 0	0 0	0 1	0.1	0.1	0.2	0.2	0.2	0 3	0 3	0 4	0.4	0 5
1.5	0 0	0 0	0 0	0 1	0 1	0.1	0.2	0.2	0 3	0.4	0.4	0.5	0 6	0 7	0 8
2.0	0 0	0 0	0 0	0 1	0 1	0.2	0.3	0.3	0.4	0 5	0.6	0 7	0 8	0.9	1 0
2.5	0 0	0 0	0 1	0.1	0 2	0.2	0.3	0.4	0 5	0.6	0 7	0 9	1 0	1.1	1 2
3.0	0 0	0 0	0 1	0 1	0 2	0.3	0.4	0.5	0 6	0 8	0.9	1 0	1 2	1 3	1 5
3.5	0 0	0 0	0 1	0 2	0 2	0.3	0 4	0.6	0 7	0 9	1 0	1 2	1 4	1 6	1 8
4.0	0 0	0 0	0 1	0 2	0 3	0 4	0.5	0.7	0 8	1 0	1 2	1 4	1 6	1 8	2 0
4.5	0 0	0 0	0 1	0 2	0 3	0.4	0.6	0.7	0.9	1.1	1 3	1 6	1 8	2 0	2 2
5.0	0 0	0 1	0 1	0 2	0 3	0.5	0.6	0.8	1.0	1.2	1 5	1 7	2 0	2.2	2 5
5.5	0 0	0 1	0 1	0 2	0 4	0.5	0.7	0.9	1.1	1.4	1 6	1 9	2 2	2 5	2 8
6.0	0 0	0 1	0 1	0 3	0 4	0.6	0.8	1.0	1.2	1.5	1 8	2 1	2 4	2 7	3 0
6.5	0 0	0 1	0 2	0 3	0 4	0.6	0.8	1.1	1.3	1.6	1 9	2 2	2 6	2 9	3 2
7.0	0 0	0 1	0 2	0 3	0 5	0.7	0.9	1.2	1.4	1.8	2 1	2 4	2 8	3 1	3 5
7.5	0 0	0 1	0 2	0 3	0 5	0.7	1.0	1.2	1.5	1 9	2.2	2.6	3 0	3.4	3 8
8.0	0 0	0 1	0 2	0 3	0 5	0.8	1.0	1.3	1.6	2 0	2.4	2 8	3 2	3 6	4 0
8.5	0 0	0 1	0 2	0 4	0 6	0.8	1.1	1.4	1.8	2 1	2 5	2 9	3 4	3 8	4 2
9.0	0 0	0 1	0 2	0 4	0 6	0.9	1.2	1.5	1.9	2 2	2.7	3 1	3 6	4 0	4 5
9.5	0 0	0 1	0 2	0.4	0 6	0.9	1.2	1.6	2.0	2.4	2.8	3 3	3 8	4 3	4 8
10.0	0 0	0 1	0 2	0 4	0.7	1.0	1.3	1.7	2.1	2 5	3.0	3 5	4 0	4.5	5.0
10.5	0 0	0 1	0 3	0 5	0.7	1.0	1.3	1.7	2.2	2 6	3.1	3.6	4 2	4 7	5.2
11.0	0 0	0 1	0 3	0 5	0 7	1.1	1.4	1.8	2.3	2 8	3.3	3 8	4.4	4 9	5.5
11.5	0 0	0 1	0 3	0 5	0 8	1.1	1.5	1.9	2.4	2 9	3.4	4 0	4.6	5 1	5.8
12.0	0 0	0 1	0 3	0 5	0 8	1.1	1.5	2.0	2.5	3 0	3.6	4 1	4 8	5.4	6 0
12.5	0 0	0 1	0 3	0 5	0 8	1.2	1.6	2.1	2.6	3.1	3.7	4.3	5 0	5 6	6.2
13.0	0 0	0 1	0 3	0 6	0.9	1.2	1.7	2.2	2.7	3.2	3.9	4 5	5 1	5 8	6.5
13.5	0 0	0 1	0 3	0 6	0 9	1.3	1.7	2.2	2.8	3.4	4.0	4 7	5.3	6.0	6.8
14.0	0 0	0 2	0 3	0 6	0.9	1.3	1.8	2.3	2.9	3.5	4.2	4 8	5.5	6 3	7.0
14.5	0 0	0 2	0 4	0 6	1.0	1.4	1.9	2.4	3.0	3.6	4.3	5 0	5.7	6.5	7.2
15.0	0 0	0 2	0 4	0 6	1.0	1.4	1.9	2.5	3.1	3.8	4.4	5.2	5.9	6.7	7.5
15.5	0 0	0 2	0 4	0 7	1.0	1.5	2.0	2.6	3.2	3.9	4.6	5 4	6 1	6.9	7 8
16.0	0 0	0 2	0 4	0 7	1.1	1.5	2.1	2.6	3.3	4.0	4.7	5 5	6.3	7.2	8.0
16.5	0 0	0 2	0 4	0 7	1.1	1.6	2.1	2.7	3.4	4.1	4.9	5.7	6 5	7.4	8.2
17.0	0 0	0 2	0 4	0.7	1 1	1.6	2.2	2.8	3.5	4.2	5.0	5.9	6.7	7.6	8.5
17.5	0 0	0 2	0 4	0 8	1.2	1.7	2.2	2.9	3.6	4.4	5.2	6.0	6.9	7.8	8.8
18.0	0 0	0 2	0 4	0 8	1.2	1.7	2.3	3.0	3.7	4.5	5.3	6.2	7.1	8.1	9.0
18.5	0 1	0 2	0 5	0 8	1.2	1.8	2.4	3.1	3.8	4.6	5.5	6 4	7.3	8.3	9 2
19.0	0 1	0 2	0 5	0 8	1.3	1.8	2.4	3.1	3.9	4.8	5.6	6.6	7.5	8.5	9 5
19.5	0 1	0 2	0 5	0 8	1 3	1.9	2.5	3.2	4 0	4.9	5.8	6.7	7.7	8.7	9 8
20.0	0 1	0 2	0 5	0.9	1.3	1.9	2.6	3.3	1 1	5 0	5.9	6.9	7.9	9.0	10 0

Obtain from the predictions the high water and low water, one of which is before and the other after the time for which the height is required. The difference between the times of occurrence of these tides is the duration of rise or fall, and the difference between their heights is the range of tide for the above table. Find the difference between the nearest high or low water and the time for which the height is required.

Enter the table with the duration of rise or fall, printed in heavy-faced type, which most nearly agrees with the actual value, and on that horizontal line find the time from the nearest high or low water which agrees most nearly with the corresponding actual difference. The correction sought is in the column directly below, on the line with the range of tide.

When the nearest tide is high water, subtract the correction.

When the nearest tide is low water, add the correction.

Graphical Method

If the height of the tide is required for a number of times on a certain day the full tide curve for the day may be obtained by the *one-quarter, one-tenth rule.* The procedure is as follows:

1. On cross-section paper plot the high and low water points in the order of their occurrence for the day, measuring time horizontally and height vertically. These are the basic points for the curve.

2. Draw light straight lines connecting the points representing successive high and low waters.

3. Divide each of these straight lines into four equal parts. The halfway point of each line gives another point for the curve.

4. At the quarter point adjacent to high water, draw a vertical line above the point, and at the quarter point adjacent to low water, draw a vertical line below the point, making the length of these lines equal to one-tenth of the range between the high and low waters used. The points marking the ends of these vertical lines give two additional intermediate points for the curve.

5. Draw a smooth curve through the points of high and low waters and the intermediate points, making the curve well rounded near high and low waters. This curve will approximate the actual tide curve and heights for any time of the day may be readily scaled from it. The resulting graph is shown in figure A-1.

CAUTION

Both methods presented are based on the assumption that the rise and fall conform to simple cosine curves. Therefore the heights obtained will be approximate. The roughness of approximation will vary as the tide curve differs from a cosine curve.

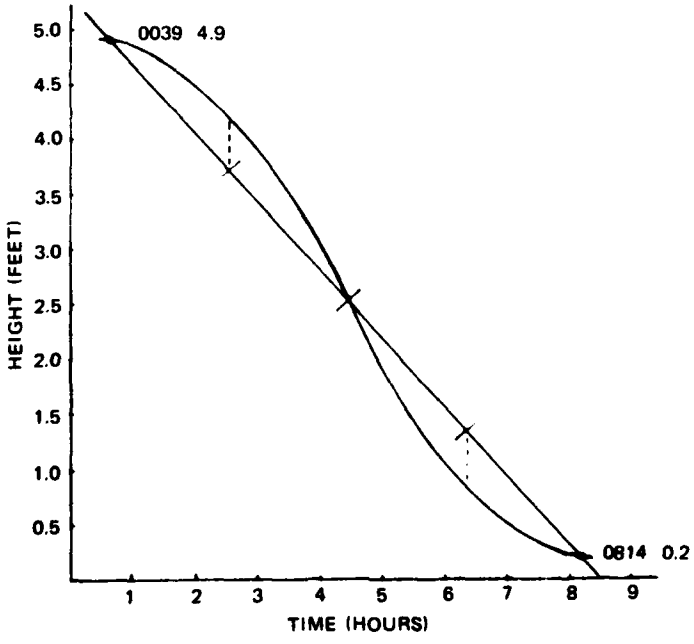


Figure A-1. Tidal Curve for Solution of the Problem.

APPENDIX B

EQUINOXES, SOLSTICES, AND LUNAR PHASES DURING 1984

The dates and times for Vernal and Autumnal Equinoxes and Summer and Winter Solstices during 1984 are listed in the table B-1. The 1984 dates and times for phases of the moon are given in table B-2. Both tables have been calculated for Point Mugu and San Nicolas Island. Two hours must be subtracted for times in the Barking Sands area.

Table B-1. Equinoxes and Solstices, 1984, Point Mugu and San Nicolas Island.

NOTE: All times are Pacific Standard Time; add 1 hour when Daylight Saving Time (PDT) is in effect. Subtract 2 hours for times in the Barking Sands area.

Vernal Equinox	*20 March, 0225 PST*	*Beginning of Spring; day and night of equal length.*
Summer Solstice	20 June, 2102 PST	Beginning of Summer; greatest duration of daylight.
Autumnal Equinox	22 September, 1233 PST	Beginning of Autumn; day and night of equal length.
Winter Solstice	21 December, 0823 PST	Beginning of Winter; greatest duration of darkness.

Table B-2. Lunar Phases, 1984, Point Mugu and San Nicolas Island.

NOTE: All times are Pacific Standard Time; add 1 hour when Daylight Saving Time (PDT) is in effect. Substract 2 hours for times in the Barking Sands area.

Phase	January		February		March		April	
	Date	Time	Date	Time	Date	Time	Date	Time
New Moon	02	2116	01	1546	02	1031	01	0410
First Quarter	11	0148	09	2000	10	1027	08	2051
Full Moon	18	0605	16	1641	17	0210	15	1111
Last Quarter	24	2048	23	0912	23	2358	22	1616
New Moon	---	------	---	------	---	------	30	1945
Phase	**May**		**June**		**July**		**August**	
	Date	Time	Date	Time	Date	Time	Date	Time
First Quarter	08	0350	06	0842	05	1304	03	1833
Full Moon	14	2029	13	0642	12	1420	11	0743
Last Quarter	22	0945	21	0310	20	1601	19	1140
New Moon	30	0848	28	1918	28	0351	26	1125
Phase	**September**		**October**		**November**		**December**	
	Date	Time	Date	Time	Date	Time	Date	Time
First Quarter	02	0630	01	1352	---	------	---	------
Full Moon	09	2301	09	1558	08	0943	08	0253
Last Quarter	18	0131	17	1314	15	2259	15	0725
New Moon	24	1911	24	0408	22	1457	22	0347
First Quarter	---	------	31	0507	30	0000	29	2127

Because the earth's period of revolution about the sun (365.24+ days) is not evenly divisible by the moon's period of revolution about the earth (27.32+ days), the dates and times of lunar phases, moonrise and moonset, and tidal data must be recomputed for each year. The following information, however, is based on geometrical relationships and holds true for all times:

1. The New Moon rises at sunrise, crosses the meridian at noon, and sets at sunset.
2. The First Quarter Moon rises at noon, crosses the meridian at sunset, and sets at midnight.
3. The Full Moon rises at sunset, crosses the meridian at midnight, and sets at sunrise.
4. The Last Quarter Moon rises at midnight, crosses the meridian at sunrise, and sets at noon.

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